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Environmental Assessment Data Systems
Systems Overview Manual

Acurex Corp.
Mountain View, CA

Prepared for

Industrial Environmental Research Lab.
Research Triangle Park, NC

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16. ABSTRACT

The report is a systems overview manual and technical reference guide for the Environmental Assessment Data Systems (EADS), a group of related computerized data bases which describe multimedia discharges from energy systems and industrial processes. The EADS have been designed to aid researchers in environmental assessment, source characterization, and control technology development. The EADS data bases are categorized as either waste stream data bases or reference data bases, and the report describes in detail the structure and data content of each category. Separate user guides will be issued for each data base component of the EADS. This report addresses the purpose and scope of the EADS and discusses the component data bases from an engineering (rather than computer) viewpoint. The Systems Overview Manual provides the user with a general knowledge of the contents and capabilities of the EADS. Specific instructions on the use of each data base are given in the individual user guides. This report also contains program library abstracts for available user software.

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January 1980

Environmental Assessment Data Systems: Systems Overview Manual

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PREFACE

In the course of fulfilling its charter, EPA performs multimedia environmental assessments of stationary sources of pollution and conducts R&D programs to develop and demonstrate feasible control technology. Such programs generate voluminous data, often according to different reporting protocols and sampling and analysis practices. The Environmental Assessment Data Systems (EADS) have been developed to consolidate the results of these programs and others into one comprehensive information system. The EADS is also designed to provide uniformity in reporting protocols and to supply current information and methods for analyzing data.

The EADS is composed of four waste stream data bases and a number of reference and support data bases. The waste stream data bases include the Fine Particle Emissions Information System (FPEIS), the Gaseous Emissions Data System (GEDS), the Liquid Effluents Data System (LEDS), and the Solid Discharge Data System (SDDS). The FPEIS was the original data base in EADS, having become operational in 1977, and is now a mature system containing data from hundreds of stationary sources and serving the needs of a diverse user community. The GEDS, LEDS, and SDDS were initiated in 1978 and are now operational. The original FPEIS has concurrently been redesigned to conform to the requirements of expanded multimedia testing, although existing data in FPEIS will continue to be available to the user.

A complete set of EADS documentation includes six publications -- one User Guide for each of the four waste stream data bases, a Terminology Reference Manual, and a Systems Overview Manual. This document, the Systems Overview Manual, provides a general systems review and technical reference guide. It has been written for one who requires a general familiarization with the EADS and not for the day-to-day user and encoder of data, although the latter group of users would do well to read the Systems Overview Manual upon first introduction to the EADS.

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SECTION 1.0

INTRODUCTION

This document is a general systems overview manual and technical reference guide for the Environmental Assessment Data Systems (EADS), a group of interrelated computerized data bases which describe multimedia discharges from energy systems, industrial processes, and municipal treatment systems. The EADS has been designed to aid researchers in environmental assessment, source characterization, control technology development, and a variety of other research and development program types. The EADS is composed of four media-specific waste (or product) stream data bases (i.e., the Fine Particle Emissions Information System (FPEIS), the Gaseous Emissions Data System (GEDS), the Liquid Effluents Data System (LEDS), and the Solid Discharge Data System (SDDS)), and several reference data bases. The waste stream data bases contain a variety of information related to source sampling activities of a multimedia nature. In general, the data groups include: source description, stream design characteristics, control device/treatment process design information, test operating conditions (for the source, stream, and control device/treatment process), fuels and feedstocks analysis, sampling activity description, and physical, chemical, radionuclide, and bioassay analyses results.

The service that EADS can provide will appeal to a wide variety of users. The major users (as well as data suppliers) of EADS are, at least for the near-term, expected to be the environmental assessment community and government research and development organizations. The Conventional Combustion Environmental Assessment (CCEA) is one program which will probably be a significant user in this group. This is a program designed to perform a comprehensive assessment of the environmental, economic, and energy impacts of multimedia emissions from stationary conventional combustion processes (SCCP). CCEA will require large amounts of data of the types to be included in EADS, to:

- Assess the value of existing information and to aid in identifying and acquiring new information to evaluate the environmental, economic, and energy impacts of SCCP;
- Define control technology development and modification requirements;
- Define the requirements for modified or new standards to regulate pollutant emissions.

A second category of users for EADS may be ambient and regional pollutant modelers -- those looking at specific area emission problems and source/receptor relationships. A third group of users are the regulators. This group will include the EPA Program Offices; the Office of Air Quality Planning and Standards, the Effluent Guidelines Division, and the Office of Solid Waste. The last anticipated group of users is the control equipment developers. The primary function of EADS will be to provide a base of information on sources, controls, and emissions that can support these users in attaining their separate but related objectives.

EADS is expected to be a multipurpose data base due to its comprehensive structure and content. In addition, its utility will be greatly enhanced due to its multimedia content and the interlinking between the four waste stream data bases. Interlinking is necessary to enable a control strategy analyst or an R&D program planner to select the most environmentally acceptable control methods on a systems basis. When one considers the objectives and scope of today's investigative and iterative environmental studies, it is easy to see why interlinking is necessary. Environmental Assessments, for example, are intended to determine comprehensive multimedia environmental loadings and compare them to existing emissions and ambient standards. Resulting health, ecological and environmental effects, and cross-media impacts and trade-offs are also assessed. It is necessary and useful to examine and compare emissions across all media from a specific source.

Last, but not least, the EADS will save valuable program funds. Information and data searches will be much easier and more thorough, and information can be obtained from the data base at no cost to the user.

This report describes the various system components, how they are used, and what functions they perform for the user.

The Systems Overview Manual is intended to supply the user with a general knowledge of the contents and capabilities of the EADS in engineering terms rather than from a computer viewpoint. More specific information for the day-to-day user regarding the entry and retrieval of data, the detailed structure, and precise functioning of the complete system can be found in the individual waste stream data base User Guides and in the Terminology Reference Manual.

A complete set of EADS documentation, in addition to the Systems Overview Manual, includes: the Gaseous Emissions Data System User Guide, EPA 600/8-80-006, January 1980; the Liquid Effluents Data System User Guide, EPA 600/8-80-008, January 1980; the Solid Discharge Data System User Guide, EPA 600/8-80-009, January 1980; the Fine Particle Emissions Information System User Guide, EPA 600/8-80-007, January 1980; and the Terminology Reference Manual, EPA 600/8-80-011, February 1980. Documentation will be either registered or unregistered. Holders of registered documentation will receive regular updates, while those with unregistered copies will not.

SECTION 2.0

PURPOSE AND SCOPE OF EADS

2.1 WHAT IS THE EADS

The EADS is composed of four waste (or product) stream data bases supported by a variety of reference data bases and user output programs. The four waste stream data bases are the Fine Particle Emissions Information System (FPEIS), the Gaseous Emissions Data System (GEDS), the Liquid Effluents Data System (LEDS), and the Solid Discharge Data System (SDDS). Each contains media-specific waste stream emissions or effluent data from stationary point sources. These may include industrial processes, energy conversion processes, or municipal wastewater treatment plants. The EADS concept has been designed primarily to aid researchers in environmental assessment, emissions characterization, and control technology development. Users will find the waste stream data bases to be comprehensive in design and, thus, will certainly find a wide range of application for them. Section 2.3, which follows, will discuss potential uses of the EADS in greater detail.

Each of the four waste stream data bases contains similar data. In fact, approximately 90 percent of the data elements are common to all four data bases. The types of data contained in the EADS have been modeled after the sampling and analysis protocols of several EPA offices and laboratories. The most current protocols available were used during the data base development. In particular, the Level 1* environmental assessment protocols used by the Industrial Environmental Research Laboratories were followed, as well as the special requirements of the Municipal Environmental Research Laboratory in reporting data obtained from sampling of public owned treatment works (POTW). Great care was taken in designing the system to facilitate the entry of results of chemical, radionuclide, and bioassay analyses. In the event that these protocols are changed, it will be a relatively simple matter to modify the data base as needed. In fact, periodic updates will be a matter of course, and those users holding registered documentation will regularly receive these updates.

Each waste stream data base contains source sampling data which may include: design and operating data on the control equipment; results of chemical or physical analysis of the fuels and feedstocks used in the process; process descriptions of the source; descriptions of the sampling equipment and techniques employed; and results of chemical, physical, radiological, and biological/ecological tests on the collected samples. Each of these general data categories contains numerous data elements in which to record information. In addition, the FPEIS and the LEDS have unique data groups designed for the special requirements of their particular media sampling requirements. The FPEIS has special elements for recording particle size information and the LEDS has a unique data group for recording wastewater collection system effluent information. A more detailed discussion of the data elements and groups is given in Section 3.2.

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*IERL/RTP Procedures Manual: Level 1 Environmental Assessment (Second Edition), EPA-600/7-78-201, October 1978.

EADS will also be supported by a number of reference data bases and user software designed to provide a variety of service functions to the waste stream data bases. The use and function of these are discussed in detail in Sections 4.0 and 5.0, respectively. We will briefly discuss some of the more important ones in this section.

MEGDAT is a reference data base which catalogues properties of chemical compounds, including chemical and toxicological properties. In addition, all regulatory standards, recommended exposure levels of that compound, threshold values, etc. from NIOSH, EPA, OSHA, and other government organizations, are included. Such information, when compared with actual source emissions, will assist researchers in a variety of studies. For example, such information may assist a researcher in assessing the effect that a specific control technology has on emissions of pollutants other than the one it is intended to control, and how those emission concentrations compare to regulatory values.

A related reference data base is the TERMS data base, of which the Chemical Data Table (CDT) is one part. The TERMS data base is described in detail later. The CDT supplies chemical ID numbers, synonyms, the empirical formula, and the molecular weight of the species or compound. The CDT can be thought of as providing a link (or translator) between the waste stream data bases and MEGDAT. Source emissions of compounds are stored in the waste stream data bases as either Multimedia Environmental Goal (MEG) ID numbers (Multimedia Environmental Goals for Environmental Assessment Volumes 1 and 2, EPA-600/7-77-136a,b, November 1977) or as Chemical Abstracts (CAS) numbers (Chemical Abstracts -- Chemical Substance Index, American Chemical Society). MEGDAT is organized by MEG ID number.

The CDT is the link which facilitates data searches, particularly for users more familiar with the CAS numbers.

User software is described in Section 5.0, Program Library. Briefly, the user software includes output routines for specific purposes which, in some cases, are media-specific. They are tools to assist the user with more efficient retrieval and use of the data.

The EADS originated from recognition of the fact that EPA's Environmental Assessment (EA) program would produce a large quantity of source emissions data. For that data to be organized and useful, it would have to be computerized. Since then, many other EPA programs have committed to entering their data into the EADS. These include a number of programs related to specific sources and environmental problems that have their own unique set of reporting requirements. The EADS has been, and can be again, modified to accommodate those unique requirements. Similarly, special purpose output programs can be developed if users have particular data analysis needs.

The question is frequently asked, what is the relationship of EADS to other data bases? Does the EADS replace other EPA data bases? The EADS is designed to augment other systems as well as to provide a totally new and comprehensive repository for stationary point source emissions data. It is not intended to replace any other existing data bases such as STORET, NEDS, or SOTDAT. Whereas these program office data bases are concerned with collecting data from all sources within a given industrial category, EADS is not. The principal function of the EADS within OR&D is to support control technology development. In this role, it is not necessary to sample all sources in order to quantify the performance of control systems or to ascertain their applicability to a particular type of source. It is necessary, however, to describe the source and control systems as comprehensively as possible. Generalizations may always be made from detailed data compilations. If only the results or conclusions are given, we have no way of knowing how they were determined. In this way, the EADS satisfies not only an important research function, but it also supplements program office data available to the Agency through regulatory or enforcement-related activities.

2.2 WHY AN EADS

Any data base is useful only if it works, if it contains current information, and if it treats the subject matter comprehensively. And, of course, there must be a demonstrated need. Why, then, has the EADS been created? What are its purposes? What are its uses? The purpose of this section is to explain the reasons for developing the EADS. Its precise uses, which exist as an output program library, will be discussed in detail in the following section.

There are three primary reasons for the development of the EADS, and they are all very much interrelated and dependent on each other. First, a system was needed to consolidate the vast amount of sampling and analysis data which was, and still is, being produced by various government agencies and their contractors. The research and development emphasis in the 1970's has been on pollutant regulatory activities and control technology development. This will surely carry through to the 1980's and will likely expand with more complex programs involving multimedia sampling and analysis. Regulatory strategies and control technology development efforts must now take many more factors into account due to the increasingly recognized additive and synergistic effects of stationary source emissions and pollutant controls. The problem is now recognized to be multimedia. Researchers must assess types and quantities of pollutants being emitted as aerosols, gases, liquids, and solid discharges. Furthermore, in addition to just quantitative measurements of pollutant chemical concentrations, programs now are evaluating radiological emissions, and are studying health and ecological effects of discharge stream samples as well.

The EPA and its contractors are major producers of sampling and analysis data, and are expected to continue in this role for some years. Consequently, the EPA will be a major supplier of data for the EADS, as well as being a major user of that data. Other Federal and State agencies, such as the Department of Energy (DOE) and the California Air Resources Board (CARB), are also expected to be users. All these agencies are producing more data, from a greater variety of sources and industries, and they are employing constantly evolving sampling and analysis methods.

The EADS has been designed such that there are actually four independent, but interrelated, waste or product stream data bases -- one each for fine particle, gas, liquid, and solid discharge streams. Each is structured in a similar manner, but some differences exist to reflect the manner in which different media waste streams are sampled and controlled. The contents of the EADS can easily accommodate the variety of information resulting from multimedia sampling and analysis programs. This, then, is the first reason for the creation of the EADS -- to provide a comprehensive and diverse repository for multimedia environmental sampling and analysis data and to consolidate that data in a central location where it is easily available to the user community.

The second reason for the development of the EADS is one that follows naturally from the first, and it is to provide uniformity in the manner in which data are reported and stored. This does not mean to imply that the EADS in any way dictates how data are to be collected, analyzed, and synthesized. What the EADS does do is to provide a standardized and uniform protocol for reporting sampling and analysis data. This is a critical point. Data must exist in the data bases in comparable formats so that accurate and reliable assessments of that data can be made. More specifically, data must be reported in similar units. Indeed, government agencies, the EPA in their EA program for example, actually require specific units when reporting pollutant discharge concentrations. In response to this need, the EADS has adopted a uniform data reporting protocol based on EPA's EA program and the SI system of units. Thus, data will be reported in standard units and be directly comparable in output formats.

In addition to providing uniformity with data reporting protocols, the EADS provides a good mechanism to document quality assurance and quality control (QA/QC) procedures used by the contractors. This capability was included in recognition of the high priority given QA/QC by the EPA administrator. More details on the QA/QC functions provided by the EADS are given in Sections 2.6 and 3.3.3.

The third and perhaps the most important reason for the creation of the EADS is to supply current sampling and analysis data for evaluation by the user community and to provide standard methods for the retrieval and analysis of that data.

For example, the Program Offices of EPA require current information in fulfilling their charter of regulatory development. Data such as that contained by the EADS (i.e., stationary source emissions data) provide the foundation for regulatory policy decision making. This data must be current, comprehensive, and of documented quality. The LEDS currently supports the Office of Research & Development, Office of Water Planning & Standards, and the Office of Water Enforcement in the development of the Wastewater Treatability Manual, which is being used by EPA Regional Offices and several states. Current information and analysis methods are being provided by the FPEIS in support of an inhalable particle emission standard being developed by EPA's Office of Air Quality Planning and Standards. Output software provides estimated (i.e., extrapolated) mass fraction data in the inhalable and respirable particle range.

Once the EADS matures and contains a substantial amount of data (the FPEIS has been available for use since 1976), it will provide users with an economical, detailed, and timely source of current information. Much of the information contained in the EADS will be from 1 to 3 years old. It provides a very easy means for obtaining emissions data, being as near as your data terminal or telephone. In addition, data retrieval and use of the program library is provided as a service by EPA and, as such, will save valuable program funds. Regulatory and control technology development programs frequently require literature searches to supply available information on a source, its controls, and emissions. EADS provides this service in a variety of ways. Section 5 discusses the methods available to the user community in the form of a program library.

2.3 DATA BASE USES

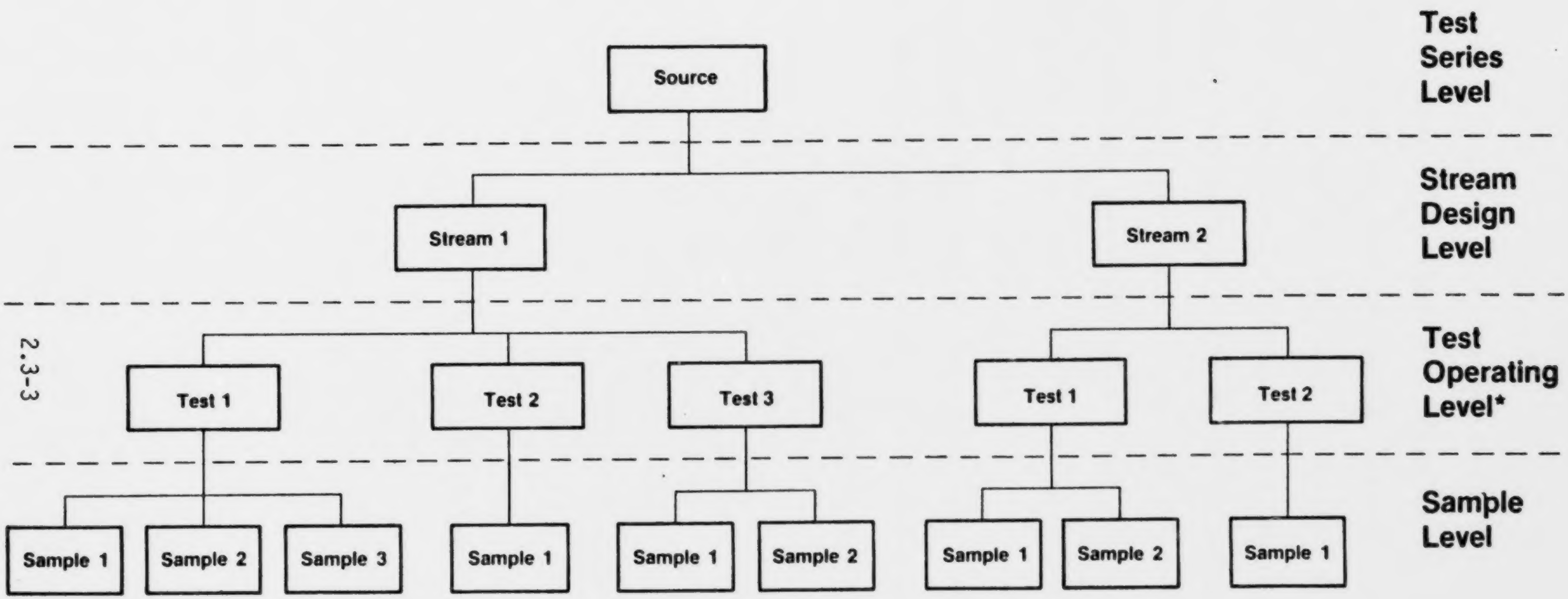
The EADS has been built upon and designed around the needs of the user community. In 1977, a feasibility study indicated a significant need and desire on the part of the user community, through a questionnaire survey, to have available a central repository for environmental assessment (EA) data. In addition, at the outset of the development of the EADS, the user community was once again approached, and needs, comments, and suggestions were solicited. The EADS was originally intended to provide support for the EA program enacted by EPA's Industrial Environmental Research Laboratory at Research Triangle Park, North Carolina. While the EA program is continually changing, the fundamental uses of the generated data remain; they are (1) to establish research, development, and demonstration priorities for waste stream control, (2) to identify waste streams and pollutants requiring further attention, (3) to identify processes for which environmental standards may be needed and the technologies available for their control, and (4) to assist with other integrated technology assessments. EADS was designed to organize and store the information and data produced from EA activities, but it has not been limited, through a rigid structure dictated by EA protocols, in its ability to accommodate data from a variety of other sources. The types of data uses that EA programs and other users may find with the EADS include the following:

- Characterize emissions data according to source category, fuels, control devices, and other qualifiers
- Summarize waste stream data by EA project
- Develop emission factors

- Characterize emissions for purposes of new and retrofit control device design and application
- Assist with regional emissions studies
- Provide background data for standards development
- Assess source types with respect to toxic and hazardous pollutants
- Perform control device and waste treatment evaluations
- Provide data for correlative studies (e.g., correlating source types with radionuclide emissions)
- Provide source emissions data for various equipment design purposes
- Provide data for private industry research projects

These are fairly specific uses to which the EADS data may be employed. You may very well be asking yourself, how can I apply the EADS data to my specific problem? How will EADS make my job easier and the solution to my problem more reliable and comprehensive?

The EADS Program Library and other data manipulation procedures provide the techniques for obtaining, organizing, and, in some cases, analyzing the data contained in the multimedia data bases. The Program Library provides a great amount of flexibility to the user and simplifies the data retrieval process. One of the most useful options available to the user is the system's ability in a retrieval operation to group data into classes according to varying criteria. With respect to a hierarchical tree structure, such as that of the EADS (Figure 2-1), this means that data may be retrieved in many convenient ways (e.g., print all information pertaining to a single site test activity, or list all sources equipped


Source
Stream 1
Stream 2
Test 1
Test 2
Test 3
Test 1
Test 2
Sample 1
Sample 2
Sample 3
Sample 1
Sample 1
Sample 2
Sample 1
Sample 2
Sample 1
Test Series Level
Stream Design Level
Test Operating Level*
Sample Level

*Each test could be at a different process (source) operating condition.

Figure 2-1. EADS Structure

with a specific control device and emitting a specific pollutant). These retrieval features are discussed in greater detail in Section 5.

In addition to general sorting and retrieval options, the EADS also can perform certain statistical, graphical, and plotting functions. And more specialized options are also available. For example, control device efficiency calculations can be performed, assuming that device inlet and outlet emissions data are available. Another program calculates fractional removal efficiencies of control devices in a fine particle stream. In other words, it calculates the efficiency of a particulate control device with respect to particle size. Other programs will search the data base for specific compounds and pollutants. A user could, for example, search the data base for a priority pollutant, a hazardous pollutant, or a conventional wastewater pollutant.

Sections 4 and 5 describe in greater detail the various features that EADS has to assist the user.

2.4 DATA ORIGINS

One of the main purposes of EPA's Industrial Environmental Research Laboratories is to prepare multimedia environmental assessments of energy systems, stationary conventional combustion processes, and industrial processes. In preparing these assessments, large amounts of multimedia emission data on both controlled and uncontrolled sources must be collected. In addition, the data collected during the assessment of one source category are often needed for another study. The EADS was thus created to organize, store, and facilitate the retrieval of these data. EPA's EA program is expected to be the prime source of data that will be entered into the EADS. The EADS will, however, not be limited to EA programs, but will accept data from virtually any source yielding multimedia emissions data.

Among other types, EADS is expected to include data from programs designed for purposes of establishing emissions standards. EADS output programs can assist in the analysis of that data. A substantial quantity of data is expected to be entered into the EADS concerning industrial effluent data as it corresponds to source type and generic control device type. This information can then be statistically analyzed to determine how specific pollutants from a particular source react to treatment in a control device. The EADS will also contain toxic pollutant data from a variety of sources, including POTW and municipal sewers.

In summary, there are no restrictions on the type of stationary source multimedia emissions data that the EADS will accept. In fact, users have every encouragement to enter their emissions data, for only a comprehensive body of information will allow the EADS to reach its full potential.

2.5 CONFIDENTIALITY OF DATA AND SOURCES

The EADS recognizes the sensitive nature of some stationary source emissions data. Contractors may have clients who wish to remain anonymous for a variety of reasons. The EADS has a special feature which is designed to protect confidential or proprietary source data. This feature may be implemented if the source owner chooses to do so. EPA and its representatives (i.e., the EADS technical staff) will have no knowledge whatsoever of the identity of the source. The manner in which this important feature is implemented is very straightforward. The encoders who are compiling the source emissions data simply ask the source owners if they wish to remain anonymous. If they so choose, the data encoders enter "CONFIDENTIAL" on the data input forms under site name and address. The owners' source, name, and location thus remain anonymous.

In addition to being an advantage to source owners, this feature is beneficial to the EADS itself. It enables the EADS to obtain, store, and use multimedia emissions data that would otherwise be unavailable. Confidentiality has already been frequently used with the original FPEIS and has been a great aid in obtaining data. Source owners should not be reluctant to enter data because of this feature.

2.6 QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

This section will describe the quality assurance and quality control activities which are performed on all data submitted to the EADS. A major objective of EADS is to provide valid and useful data to the user community. To ensure this as much as possible, each test series is reviewed and approved by the EADS Technical Support Staff, and by the submittor of the data, before it is loaded into the appropriate data base (i.e., FPEIS, GEDS, LEDS, or SDDS). The ultimate responsibility for determining the validity of the data submitted lies with the encoder. Only he can decide if the data truly represent the results of the test program. It should be relatively easy for the encoder to determine the validity of the data because of the comprehensive nature of the EADS structure and specific data elements. For example, elements such as detection limits on analytical instruments, sample size, sample aliquot size, type of instrument used, and waste stream parameters at the time of sampling all enable the encoder to make an intelligent judgment on the validity of the data.

Upon receipt of the data submitted by the encoder, the EADS Technical Support Staff begins the QA activities on the test series. The EADS QA activities are shown schematically in Figure 2-2. The test series received is processed through the EADS EDIT program* which produces an easily read listing of the input data, a list of all errors detected, and a list of all cards contained in the test series.

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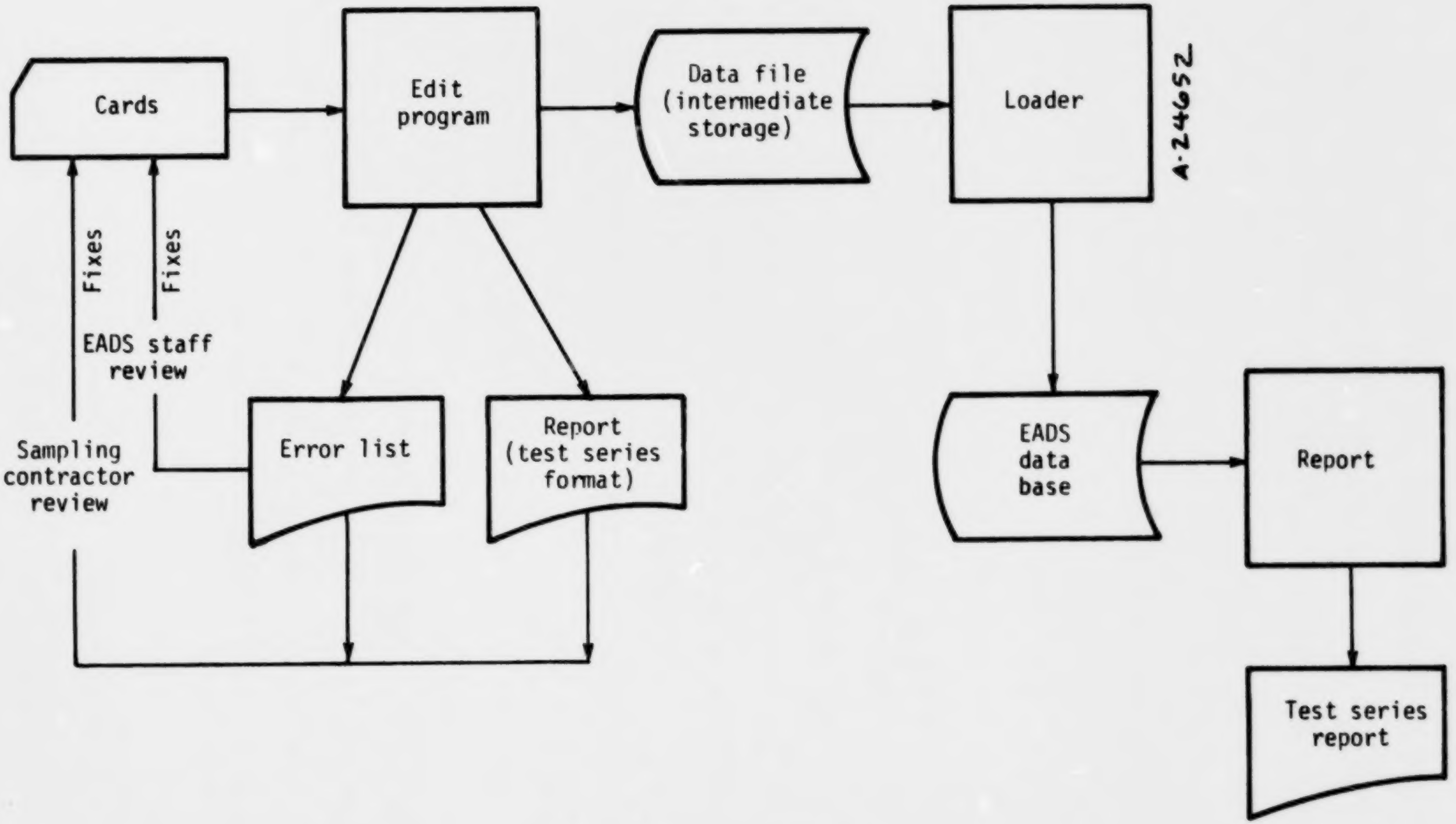
*The EDIT program is described in detail in the EADS User Guides.


Cards
Edit program
Data file (intermediate storage)
Loader
Error list
Report (test series format)
EADS data base
Report
Test series report
Fixes
Fixes
EADS staff review
Sampling contractor review

A·24652

Figure 2-2. QA Procedure

The Technical Staff reviews the EDIT report, identifies and corrects any obvious errors, and sends the corrected EDIT report to the submittor for review.

The QA procedure cycles between the encoder and the EADS staff until the submittor approves the data for data base entry. The test series data are then loaded into the data base management structure, described in Section 3.2.2. The contents of the test series are then available for public access.

The Technical Staff cannot and will not attempt to correct any measured values; that is, those data such as values of pollutant concentrations, source or control technology operating conditions, etc. Any errors in these data must be identified and validated by the encoder of the data. To put it simply, the Technical Staff corrects errors; it does not validate data. The validity, representativeness, and, ultimately, the quality of the data are the responsibility of the submittor of the data.

SECTION 3.0

EADS DESCRIPTION AND ORGANIZATION

3.1 INTRODUCTION

This section describes the structure, contents, and data definitions and protocols of the four EADS waste stream data bases (FPEIS, GEDS, LEDS, and SDDS). From the fundamental structural components all the way to the details of the data definitions, the EADS is designed to be flexible and accessible to the users of the data bases.

The hierarchical structure of the data bases intuitively orders the data from the general (source description) to the specific (analytical results). The data are contained in four levels that form the pyramidal structure, described in more detail in Section 3.2.

The four waste stream data bases are identical in structure, but they have detail differences due to data protocols specific to each media. They are interlinked to provide convenient access to data from multimedia testing programs. Examples are given to illustrate the differences and interfaces between the four data bases.

The EADS is designed to accommodate data from most testing, sampling, and analysis programs. This is accomplished through the flexible structure and data definitions. In addition, standard nomenclature has been developed to describe several data elements in a consistent and familiar manner. This expedites input processing and output requests.

This section outlines these points. Further information may be found in the EADS User Guides or from the EADS Technical Staff, whose names are listed on page vii.

3.2 WASTE STREAM DATA BASE STRUCTURE

This section presents the fundamental structural components of the EADS data base and shows how they are assembled to form a structural hierarchy.

The four EADS waste stream data bases (FPEIS, GEDS, LEDS, and SDDS) have the same structure. Naturally, though, certain data elements will be specific to one media only. Consequently, there will be detail differences between data bases, but not structural differences.

3.2.1 EADS Nomenclature

Before presenting the details of the structure of the EADS, certain terms used throughout the EADS documents are explained. These terms form the foundation upon which all of the EADS waste stream data bases are structured. Many of the terms will probably be familiar, but others such as "test" may, in the context of EADS, have definitions that are slightly different from the typical definition.

media -- Used in reference to an effluent stream from a stationary source. May be either fine particle, gaseous, liquid, or solid. While not technically a media, fine particles are considered apart from air due to their environmental implications.

source -- A source may be either an industrial process, an energy conversion facility, or a waste treatment/collection system. It is the origin of one or more multimedia effluent streams. An oil refinery and a coal-fired powerplant would each be examples of a source.

stream -- Any multimedia effluent discharging to the environment from a stationary source.

control device/treatment process -- A device or process designed to remove or treat a specific pollutant or pollutants from an effluent stream.

control system -- Frequently a discharge stream is controlled by a number of control devices which may be in either a series or parallel arrangement. The total group of control devices (or processes) on that stream is referred to as the control system.

level -- A data base structural term used to differentiate groupings of data within the data base. The EADS contains four structural levels: the test series level, the stream design level, the test operating level, and the sample level.

test series -- Taken in its broadest context, a test series designates the sampling activities performed on a source at a single site over a specified period of time (usually continuous) with a specific control system employed.

test -- A set of various types of samples taken to characterize a source waste stream(s) under one set of source and control device/treatment process operating conditions.

sample -- The measurement or group of measurements taken with a single measurement method or instrument to describe the composition of a stream at a given point in time and at a specific location.

component -- Frequently a measurement instrument can be separated into two or more components, each of which contains a sample which may be analyzed separately or combined.

3.2.2 Multilevel -- Hierarchical Structure

The structure of the EADS data bases presents and organizes a comprehensive set of data which describes the conduct, techniques, conditions, and results of stationary source emission sampling and analysis activities. Each variable or bit of data or information concerning the source test is defined as a data element.

Several data elements or information items are required to adequately describe the groups of information which are contained within the EADS. From an organizational standpoint, the various data elements are grouped in one of four levels: the test series level, the stream design level, the test operating level, and the sample level. These levels and their relationship are shown in Figure 3-1.

The key to this organization of data is the pyramid structure of the EADS. All of the EADS waste stream data bases (GEDS, FPEIS, LEDS, and SDDS) are structured in a similar manner. Looking at Figure 3-1, the pyramid structure becomes evident. Data is arranged so that general information, such as the source description and reference information, is situated at the apex of the pyramid. The next level down contains design information on the sources' effluent streams and control devices. The pyramid further expands into the tests performed on each effluent stream and the operating conditions of the source and control device(s) during those tests. The final level in the pyramid contains data on each of the samples taken during each test. This is the most specific information contained in the data base. It includes chemical, physical, radionuclide, and bioassay analytical results. Think of the pyramid structure as descending from the general to the specific, the source description being general and analytical results being the most specific.

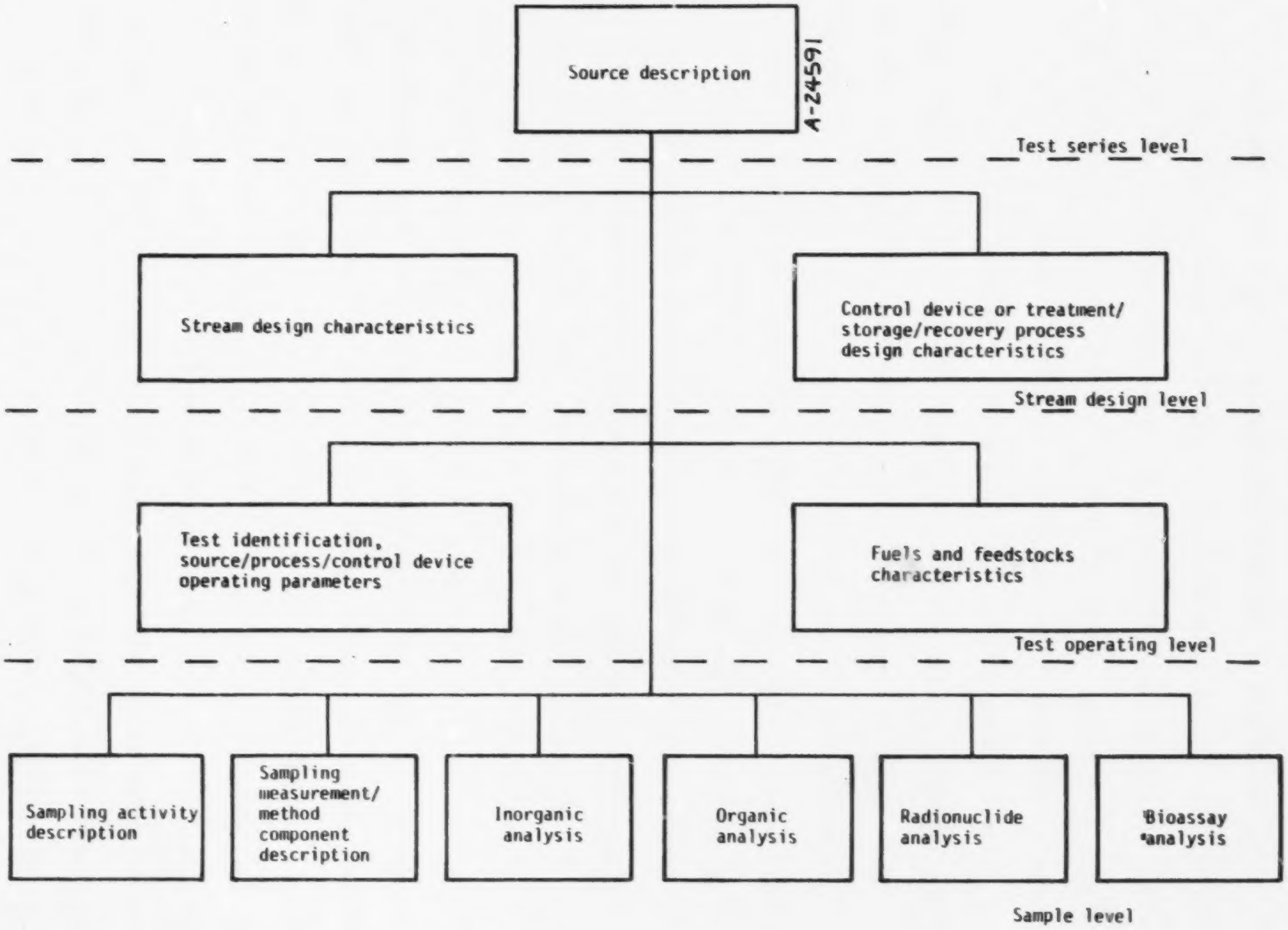

A-24591
Source description
Test series level
Stream design characteristics
Control device or treatment/ storage/recovery process design characteristics
Stream design level
Test identification, source/process/control device operating parameters
Fuels and feedstocks characteristics
Test operating level
Sampling activity description
Sampling measurement/ method component description
Inorganic analysis
Organic analysis
Radionuclide analysis
Bioassay analysis
Sample level

Figure 3-1. Waste Stream Data Base Structure and Contents

The term "test series level" is used to designate the uppermost level in the data base structure. This is where source description data are contained. A single "test series" is composed of all data in the four structural levels, the first of which has been designated the "test series level". A test series designates the sampling activities performed at a single site over a specified period of time (usually continuous) with a specific control system employed. Each test series is assigned a unique Test Series Number (TSN) which can always be used to identify that data.

The level following the test series level is the stream design level. Here, each waste stream that has been sampled during the test series is fully described with regard to design parameters. These include control device/treatment process design parameters as well as stream parameters (i.e., flowrate, temperature, pressure, etc.). Being design data, the information at this level will not change within a test series, barring, of course, any physical changes to the process, ductwork, or control device. This is a highly unlikely situation. It is important to keep in mind the meaning of a control device/treatment process. Fine particle, gaseous, and liquid waste streams have control devices to reduce emissions. Examples include ESP's, SO_2 scrubbers. and wastewater clarifiers. Solid discharge streams do not, however, have control devices per se. They are "controlled" rather by treatment, storage, or recovery processes which in some manner decrease the pollutant burden on the environment. Hence, the terminology, Control Device/Treatment/Storage/Recovery Process.

Following the stream design level is the test operating level. As the name implies, operating data for each test is defined here. Source operating data, such as operating mode and feed material rate, and control device/treatment process operating data are included. Here also, the fuels and feedstocks to the process are completely characterized. A test is broadly defined as a set of various types of samples (e.g., SASS, continuous, grab, integrated grab, etc.) taken to characterize a source waste stream(s) under one set of source and control device/treatment process operating conditions.

The fourth level in the EADS structure is the sample level. All details for each discrete sample taken during a test are contained here. This includes measurement equipment particulars, measured stream conditions at the sampling location, and complete physical, chemical, radionuclide, and bioassay analysis data.

This level contains a "component" feature which enables one to report data with respect to a measurement instrument component. For example, a sampling instrument may have multiple components that collect different samples simultaneously. Each sample component may be analyzed separately or the samples may be combined and analyzed in some combination, depending on the purpose of the test. EADS is designed to accommodate the data in any arrangement, by allowing the encoder to define the components of the sampling method according to the needs of the test or the analysis.

3.2.3 Waste Stream Data Base Contents

The previous section described the EADS hierarchical structure. This section will elaborate on the contents of the four structural levels.

These levels are simply an organizational tool that logically arranges the data from the user's standpoint. Each level contains specific types or groups of data, shown in Figure 3-1, in the previous section. The data are grouped into the following general categories: (a) general source description and related information; (b) design conditions and parameters of the effluent stream and of the control device or treatment/storage/recovery process; (c) test operating information including analyses of any fuels and feedstocks; (d) sampling activity information including chemical, physical, radionuclide, and bioassay analysis results.

The reader may find it useful to refer to the data input forms and the descriptive glossary in the Appendix while reading about the data base contents.

3.2.3.1 Source Description

The first, or test series, level contains the data elements that describe the source that was tested, the source location, and the reference material from which the data were derived. Also in the test series level (in the LEDS only) are data elements that contain wastewater collection system effluent information.

To enable a general grouping of sources to be made and to facilitate computer searches of particular source types, each source is to be described using standard terms from the EADS Source Classification System.*
The NEDS Source Classification Codes (SCC) were formerly used with the FPEIS, but to enhance flexibility, they have been replaced by the EADS system. The NEDS SCC system had proved to be too cumbersome and archaic and had contained terminology unfamiliar to users of environmental data. The EADS system contains more familiar source terminology and, in addition, contains a reference to the Standard Industrial Classification** (SIC) code for cross-reference to other data systems.

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*The listing of the EADS Source Classification System is in the Terminology Reference Manual.

**Standard Industrial Classification Manual, Executive Office of the President, Office of Management and Budget, prepared by the Statistical Policy Division, GPO Stock No. 4101-0066, 1972.

The name of the testing organization and the reference (report, journal article, etc.) from which the data have been extracted are included. Additionally, comments or data may be included which may be pertinent to the test series, but for which a specific data element is not available.

3.2.3.2 Stream Design Characteristics

A description of the design conditions of the effluent stream at the sampling location is contained within this group. This information may include data elements such as flowrate, temperature, and pressure. Because this is design information, the values will not change from test to test, unless of course the control device or stream itself is altered in some manner.

3.2.3.3 Control Device Design Characteristics

This grouping of data elements contains design information and descriptions of the control system tested (if any) for the test series. Standard nomenclature (see the Terminology Reference Manual) is used to characterize the control device or treatment process. The commercial name and manufacturer may also be entered. Design parameters provide additional information on the control device or treatment process.

3.2.3.4 Test Identification

Data elements in this group describe actual operating conditions, as opposed to design conditions, for the test, source, and control devices. Included here is such information as test dates and times and operating conditions of the source. Operating parameters describe the actual characteristics of the control device.

3.2.3.5 Fuels and Feedstocks Characteristics

This group contains data describing all fuels and feedstocks that are inputs to the process being tested. With today's synergistic approaches to assessing environmental impacts and their control, it is necessary to perform comprehensive material balances on a pollution source. It is not enough to look only at outputs; inputs must be scrutinized also.

The EADS contains data on the consumption rate and type of fuel or feedstock, and general characteristics such as physical parameters. In addition to an ultimate and proximate analysis of the fuels fed to a process, EADS is also designed to accept inorganic and organic chemical data.

3.2.3.6 Sampling Activity Description

This group of data elements consists of information that describes individual sampling activities, including actual measured stream conditions at the sampling location, such as temperature, pressure, and moisture content. In addition, the sampling location itself would be described in such a manner that its location with respect to a control device or treatment process would be clear.

3.2.3.7 Component Description

Frequently, a measurement instrument or sample contains two or more components, each of which is analyzed separately. This group of EADS data describes not only the sample collection instrument itself, but also each component separately and reports the results obtained from the analysis performed on each sample or component.

All of the chemical, physical, and radionuclide results are reported at the component level. Bioassays may be performed using one sample component, but frequently components are combined to meet a minimum sample quantity requirement. Consequently, these results are not reported by component.

Space is provided to accommodate any qualitative measurement of an effluent stream parameter, other than inorganic and organic chemical species, radionuclide, and bioassay results. This will typically include physical parameters of the sample such as opacity, odor, or color. For LEDS only, there are standard terms to be used in describing the effluent characteristics which are conventional wastewater pollutants.

3.2.3.8 Inorganic/Non-Level 1 Organic Analysis

The EADS is designed to accept all inorganic results and organic results that do not conform to Level 1 protocols; that is, species-specific organic results. Results of the inorganic or non-Level 1 analysis are typically presented as the identification of the species analyzed and the actual source concentration as contributed by each component.

The EADS provides flexibility for the identification of chemical species. This is in recognition of the fact that there presently exists a variety of coding systems for identifying chemical species and compounds. The chemical ID used in reporting chemical data is likely to be one with which the user is most familiar, based largely on the nature of the project on which he is working. The EADS enables users to choose between two chemical ID schema when they encode their data. These are the Chemical Abstracts Services (CAS) Registration Numbers,* and the Multimedia Environmental Goals (MEG) Numbers.** A list of chemical compounds and elements is provided in the Terminology Reference Manual, in preferred name order.

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*Chemical Abstracts -- Chemical Substance Index, American Chemical Society.

**Multimedia Environmental Goals for Environmental Assessment, EPA 600/7-77-136a, November 1977.

3.2.3.9 Level 1 Organic Analysis

Special provisions have been included to accommodate the organic species reporting protocol of a Level 1 environmental assessment sampling and analysis program. Level 1 organic analyses require special reporting formats due to the mix of qualitative and semiquantitative results from analyses such as liquid chromatography fractionation and low resolution mass spectra. The purpose of this type of analysis is to identify the major classes of organic compounds in a process effluent stream and to estimate their concentrations. In Level 1, this is done by liquid chromatography which separates a sample into fractions characterized by a range of boiling points. These are called fraction ID's and are labeled LC1 through LC7 -- corresponding to groups of chemical species with successively higher boiling points. Both the whole sample and the LC fractions are analyzed for total chromatographable organics (TCO) and gravimetric (Grav) organic concentrations. TCO analysis gives volatile organic material, and Grav analysis yields nonvolatile organic material. These data, in combination with qualitative results obtained from infrared analysis, called intensity values, and information about the source, enable the analyst to identify the chemical species in a waste stream sample. Occasionally, individual species are identified in an extension of Level 1 analysis, and their concentrations are determined. The EADS is fully capable of accepting all this data. In addition, fractions, organic categories, and species are identified by a MEG Number, discussed in the previous section. This is a unique ID for that species and is part of a system used in EA methodology for evaluating and ranking pollutants according to environmental impact. The encoder must use MEG Numbers when inputting EA data (i.e., Level 1).

3.2.3.10 Radionuclide Analysis

The EADS is designed to accept radionuclide data results. Actual source concentrations of radionuclides are recorded. The isotopes most likely to be of interest include the following: U-238, Ra-226, Pb-210, PO-210, U-235, Th-232, Bi-212, Ac-228, and Bi-214. Also, space is available to include metastable isotopes (i.e., Kr-85M).

3.2.3.11 Bioassay Analysis

As part of EPA's EA methodology, biological indicators are coupled with chemical tests to assess the hazard potential of process waste streams. The Level 1 screening phase uses a series of short-term bioassays* to detect acute biological effects. Bioassays may be either health-related or ecological tests. While EA methodology has specific recommendations for applying bioassays to samples, it is frequently the case that these recommendations cannot be followed. For example, EA protocol says that particulates captured in a SASS train should be divided into two components -- those less than 3 microns and those greater than 3 microns. Frequently, it is the case that neither component separately can meet the minimum sample quantity requirement for bioassay tests, so the components must be combined.

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*IERL-RTP Procedures Manual: Level 1 Environmental Assessment Biological Tests for Pilot Studies, K. M. Duke, et al., EPA-600/7-77-043, April 1977.

3.2.4 Waste Stream Data Base Differences

The four waste stream data bases (FPEIS, GEDS, LEDS, and SDDS) have the same structure, but due to differences in media, the contents (or data elements) are not identical. Each data base was designed for the sampling and analysis methods specific to the media it covers, while retaining structural similarities with the others for efficient crosslinking for multimedia sampling. This section will elaborate on some of the differences.

An obvious example occurs in the stream characteristics. The encoder is interested in moisture content of a gaseous stream, but not of a liquid effluent stream. Hence, this field is included in GEDS, but not in LEDS.

Several data elements are defined similarly, but the values are entered in units suitable to the media. For example, the actual concentration of a chemical compound is entered in micrograms per cubic meter (GEDS and FPEIS), per liter (LEDS), or per gram (SDDS). When comparing data from two or more media, the user should be alerted to these differences.

In two of the data bases, FPEIS and LEDS, special data elements were defined to accommodate important data specific to each media.

In the case of LEDS, an entire data input form is devoted to wastewater collection system effluent information. This identifies the site location (latitude and longitude) and the fraction of the influent stream to a treatment works that is from industrial sources. Other data elements contain the SIC code, the flow contributed by each industrial activity, and the number of establishments in the service area.

For FPEIS, a special data input form is included for component level data. Included are data elements for particulate sizing and for the particle stage weight or concentration. A short input form is to be used if no chemical or radionuclide data will be reported for the component. If this information will be reported, a longer form is used which includes all the information on the short form in addition to chemical and radionuclide data. The purpose of the short form is to save encoding time and computer storage.

3.2.5 Waste Stream Data Base Interfaces

Because pollution controls are developed on a media-by-media and pollutant-by-pollutant basis, EADS is composed of media-specific data base systems. The four EADS waste stream data bases (FPEIS, GEDS, LEDS, and SDDS) are independent but interlinked to provide common accessibility to data. Interlinking is necessary to enable a control strategy analyst or an R&D program planner to select the most environmentally acceptable control methods on a systems basis. When one considers the objectives and scope of today's investigative and iterative environmental studies, it is easy to see why interlinking is necessary. Environmental Assessments, for example, are intended to determine comprehensive multimedia environmental loadings and compare them to existing emissions and ambient standards. Resulting health, ecological, and environmental effects, and cross-media impacts and trade-offs are also assessed. It is necessary and useful to examine and compare emissions across all media from a specific source.

3.2.5.1 Multimedia Test Series

Frequently in source sampling activities, multimedia effluent samples are collected and analyzed. For example, to evaluate the total environmental impact of a flue gas scrubber installation on a coal-fired boiler, you would need to sample and analyze a variety of effluent streams from different media. Among these might be the boiler bottom ash, the flue gas into and out of the scrubber, and the liquid slurry produced from the scrubber treatment of the flue gas. These would be solid, gaseous, and liquid effluents, respectively, all from one source. The analysis data from each specific media effluent stream would be encoded in its respective data base (e.g., gas stream analysis results would be encoded into the GEDS). You might ask yourself how, if data from one source are entered into four separate data bases in EADS, a user could benefit from these data. Each data base contains a cross reference to the other data bases containing data taken from the same source at the same point in time. This cross reference is in the form of the Test Series Number (TSN). Thus, in our example, the GEDS file would contain the FPEIS, LEDS, and SDDS TSN's as cross references. In the same manner, test series in the other media would contain a cross reference (TSN) to the GEDS data base.

3.2.5.2 FPEIS/GEDS Interface

The Source Assessment Sampling System (SASS)* is a measurement instrument with multiple components that collect different compounds simultaneously. The SASS train is the recommended EPA environmental assessment measurement instrument for gaseous streams which may contain fine particles. The SASS train has a set of three cyclones followed by a filter which classifies fine particles in a gas stream according to size. Each cyclone and the filter may be analyzed as a separate component or they may be combined and analyzed in some combination, depending on the purpose of the test. Simultaneously, other components collect gaseous organic material and volatile trace elements. Typically, each SASS component is subjected separately to a variety of analyses. EADS is designed to accommodate the data resulting from such an arrangement.

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*Complete detailed information on the SASS can be found in IERL-RTP Procedures Manual: Level 1 Environmental Assessment (Second Edition), EPA-600/7-78-201, October 1978.

The SASS is a special case however. Even though the SASS is one sampling train, it produces data on fine particles and gaseous pollutants. Thus, the fine particle data would be in FPEIS, with the cyclones and filter being the components, and the organic and trace element data collected from the organic module and impinger components would be in GEDS. While this procedure may seem confusing while encoding data, it will facilitate data output requests.

3.2.5.3 LEDS/SDDS Interface

Often a liquid effluent sample is filtered prior to analysis, and the residue and filtrate are analyzed separately. EADS treats these two samples as two components. However, since the residue sample is a solid and the filtrate is a liquid, the resulting analysis data for each must be encoded in a separate data base. The solid sample data must be encoded into SDDS and the liquid sample data into LEDS.

Again, this procedure facilitates output requests, and the test series in the two data bases will be cross-referenced for multimedia analysis.

3.2.6 System Flexibility

While it may appear to the user that the EADS has many rules and restrictions, the system has been designed with flexibility to accommodate all data. Any computerized data system must reach a compromise between flexibility and established rules to maintain a protocol. Indeed, once the user becomes familiar with the system protocol, he will come to realize that uniformity of terminology and units, for example, actually facilitates the use of the system rather than being a restriction. This section describes some of the ways in which the system accomplishes this.

3.2.6.1 Structural Flexibility

Looking again at Figure 3-1, it is easy to see the flexibility of the data base structure. Each test series includes information and data from one stationary source in a given time period with one particular source/control system. Each source, however, can contain any number of effluent streams in any media. The data system is capable of accommodating as many effluent streams as are tested. In the same manner, each stream is likely to be tested a number of times under a variety of source and control device operating conditions. Again, the data system will accommodate information from any number of tests performed on each effluent stream. Frequently an effluent stream is sampled with a variety of measurement methods under each set of source/control operating conditions. The data system will accommodate information from any number of samples obtained during each test on each stream.

The EADS will contain many test series each structured in a similar manner. The EADS will accept a test series of any size, regardless of the number of effluent streams, tests, or samples.

3.2.6.2 Comments Sections

In the development of the EADS, every effort was made to include data elements to cover most types and amounts of data, typical of a sampling and analysis program. However, the data elements that comprise the EADS waste stream data bases may not be appropriate for all the data that are taken during the testing or sampling activity. Or, the data may not fit into the available space on the encoding forms.

The EADS is designed to accommodate all data by providing comments sections where any data or remarks may be entered. Also, in a number of cases, additional cards may be included when extra space is required.

3.2.6.3 Confidential Data

An important feature to note is that the EADS can protect confidential or proprietary source data.* This enables the EADS to store data from sources which would otherwise be unavailable to the EADS. Neither EPA nor any other user will have any knowledge of the identity of the source. This feature has been used with the original FPEIS and has been a great aid in obtaining data.

3.2.6.4 Labor Saving Features

In developing the data input forms and the data processing programs, several labor saving features have been introduced. These features reduce time, labor, and cost on the part of the encoder and the keypuncher.

The "Repetitive Data Feature" (RDF) is an important labor saving device because it frees the encoder from having to enter repetitive data.** When large amounts of unchanging data are entered into the data base, this feature will save considerable time and effort. For example, control device design parameters will not change between tests performed at different operating conditions. Rather than having to encode these parameters and values for each test, the RDF enables the encoder to make the entries for the first test only. The identical entries for design parameters are automatically filled in for the remainder of the tests.

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*The submittor simply enters "CONFIDENTIAL" in those fields which identify the source.

**The repetitive data feature is discussed in detail in the EADS User Guides.

Another benefit is reducing the amount of verifying that is needed to ensure the validity of the data. Putting in additional data or deleting existing values can also be accommodated by the repetitive data feature.

Another labor saving device involves the control device and design and operating parameter data. If two different effluent streams in a test series have the same control device or treatment process applied, all the data on the control device and its design specifications may be referenced by the unique device number assigned to the control or process. The information is entered for the first stream, and automatically repeated for the second by specifying only the device number. Similarly, the operating parameters, as encoded for the first test, are repeated automatically for subsequent tests unless changed or deleted.

3.3 DATA DEFINITION AND PROTOCOL

A major function of the EADS is to provide quality data that is readily accessible for environmental analysis. The data elements that constitute the EADS waste stream data bases are designed to accommodate most testing, sampling, and analysis data. The data definitions are intended to be flexible and understandable to the encoders and the users of the data in the EADS.

To facilitate output requests and sorting of data, lists of standard terms have been developed for certain data elements. This provides consistent and familiar terminology to characterize and define the source, the feed material, and other sampling and analysis protocols. Standard units are also used in most cases, allowing convenient comparisons of data from different sources and media.

To provide the user with a means to assess the quality of the sampling and analysis data, the EADS has references to a quality assurance data base which contains reports on audits of the analytical laboratories.

This section elaborates on these points.

3.3.1 Standard Nomenclature

The EADS has been designed to aid researchers in environmental assessment, source characterization, and control technology development activities. Standard nomenclature or terminology is used to aid in entering and retrieving information from the EADS. To selectively retrieve data from the waste stream data bases, consistent terminology must be used if the computer search is to obtain an exact match.

The Terminology Reference Manual* contains tables of standard nomenclature used to describe certain data categories in the waste stream data bases. The terminology is used to categorize sources, describe control technology, identify chemical compounds and elements, describe analytical methods in sample analysis, and list other data. The terminology applies to fine particle, gas, liquid, and solid discharge effluent streams.

3.3.1.1 Using Standard Nomenclature to Retrieve Data

The use of standard nomenclature enables the users to request computer searches and sorting of data. Computerized information retrieval systems require standard terms for specific data selection to be made.

Computers search for and select data by comparing the selected value to a known value. When alphanumeric characters are specified, such as in the name of a control device, the selected value must match the known value exactly. For example, if "ESP" is the standard term, or known value, and a search is made for it, all entries in the data base with the value "ESP" will be selected. However, entries having the value "ELECTROSTATIC PRECIPITATOR" will not be chosen, although it is technically correct. As far as the computer is concerned, the two data are not equal and do not match, and the selection will fail.

Therefore, to ensure that uniform selection criteria are possible, the encoder selects terms from lists of standard nomenclature for certain data elements. Whenever a computer search for data from one of these data elements is requested, it is essential that correct spelling is used, or the request will fail.

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*Environmental Assessment Data Systems: Terminology Reference Manual, Larkin, R.J., Ballard, B., Editors, EPA-600/8-80-011, February 1980.

After the data are encoded, but before they are loaded into the data base, a program edits the data to ensure correctness. This EDIT program will check the entries for those data elements that require standard nomenclature by matching the entry with the standard list to check for spelling, etc. This procedure will ensure that the data are correctly encoded and that a subsequent computerized data search will be successful. (The reader is referred to the User Guides,* Section 5, for a discussion of the EDIT Program, and to Section 7 for more detail on the other report programs.)

3.3.1.2 Adaptability/Flexibility

These lists of standard nomenclature are not fixed but are expandable and will likely be expanded on a continuing basis. The encoder may suggest additions to the lists by contacting the EADS Program Manager, who will approve the new term(s) and add them to the list. As additional entries are included in the tables of standard nomenclature, the Terminology Reference Manual will be updated, and revisions will be issued to those with registered documentation.

The EADS Source Classification System has been developed to describe the source. The source is defined by four data elements, with increasingly specific descriptors. The intent of this type of organization is to be general enough to accommodate most, if not all, sources, but at the same time maintain a flexible mechanism for sorting data by source characteristics. The focus of this classification system is to use familiar terminology to describe the source that will be meaningful to the user. For example, one could use this terminology to search EADS for all data pertaining to "tangential utility boilers" or data from "high Btu coal gasifiers using the Lurgi process." Furthermore, one could sort data from these sources adding other qualifiers; for example, design process rate or feed material category. Other source classification systems, such as the NEDS SCC codes, do not have this degree of flexibility.

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*Environmental Assessment Data Systems User Guides:

1. Reider, J. P., Larkin, R. J., Editors, Fine Particle Emissions Information System User Guide, EPA-600/8-80-007, January 1980.
2. Larkin, R., Editor, Gaseous Emissions Data System User Guide, EPA-600/8-80-006, January 1980.
3. Larkin, R., Editor, Liquid Effluents Data System User Guide, EPA-600/8-80-008, January 1980.
4. Larkin, R., Editor, Solid Discharge Data System User Guide, EPA-600/8-80-009, January 1980.

For convenient sorting and searching of information, other data in the EADS for which standard nomenclature has been developed include the feed material, control device or treatment process, design and operating parameters, sampling method, laboratory analysis method, names of chemical species, and bioassay data.

3.3.2 Standard Engineering Units

The EADS uses metric units exclusively. While every attempt has been made to use SI (International System of Units) protocol, some data elements are expressed in the metric equivalent of a more common English unit. This is consistent with EPA policy regarding the use of metric units.

The Terminology Reference Manual contains a list of accepted engineering units to be used in encoding data into the EADS. We recognize the inconvenience for the encoder in requiring specific units for the input data, but data in standardized units will be valuable to the user who retrieves information from the EADS. The data will be in consistent units and will be readily comparable for environmental analysis.

The EADS contains data which follow EPA's Level 1 protocols for reporting chemical species data.* For example, concentrations are reported in micrograms per cubic meter for a gas stream, per liter for a liquid effluent stream, or per gram for a solid discharge stream. Also, total chromatographable organics (TCO) and gravimetric analysis results are reported in milligrams.

Bioassay data are reported in terms and units which are in common engineering practice. This will provide a consistent basis for data analysis by the user of the information in the EADS.

3.3.3 Quality Assurance/Quality Control

The EADS contains data elements that assist the user in assessing data quality, accuracy, and validity. These include identification of the testing group, analysis methods, sampling methods, high and low detection limits of the analytical methods, total sample quantities and aliquots, analytical laboratories, and reference to any laboratory QA audit information. Analytical laboratory audits are routinely performed by government organizations such as the Environmental Protection Agency. The results of such audits can be valuable in assessing the reliability and accuracy of analytical results. The audit information is contained in a separate reference data base which is accessed through a QA/QC code reported in the EADS.

The QA/QC codes are obtained by the user from the EADS Program Manager at the time the EADS data input forms are encoded. Each analytical laboratory that has undergone a QA/QC audit will be assigned a unique QA/QC code. The code refers the user to a reference data base which contains the results of the audit. These QA/QC audits describe the efficiency and effectiveness of a particular laboratory in recovering a known concentration of a chemical species from a spiked sample, thereby giving the user of the laboratory's services an appraisal of the laboratory's performance. The QA/QC data base will contain each chemical species reported and will identify the analysis method used to detect the chemical. Also, the number of samples submitted, the average percent of recovery and its standard deviation, and the quality control frequency are reported for each chemical species or compound in the audit.

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*IERL-RTP Procedures Manual: Level 1 Environmental Assessment (Second Edition), EPA-600/7-78-201, October 1978.

In the final analysis, the EADS QA/QC data elements, however, only ensure the correctness of the data on an as reported basis. The responsibility for data validity lies with the people who collect and input the data.

SECTION 4.0

REFERENCE DATA BASES AND USER SOFTWARE

4.1 INTRODUCTION

As discussed earlier, the EADS is composed of two general types of computerized data bases: the waste or product stream data bases that report actual process discharge data and the reference data bases that provide ancillary data or information pertaining to the interpretation of the waste stream data. This section describes the reference data bases presently contained in the EADS and identifies the role each fulfills in the use of the EADS.

The reference data bases will vary dramatically in the type of information and the manner in which the data are utilized. As the needs of the EADS user community grow, additional reference data bases will be developed and implemented. Separate user documentation will be issued on each data base in a format consistent with the other EADS User Guides.

4.2 EADS TERMINOLOGY DATA BASE (TERMS)

The EADS waste stream data bases require that standard nomenclature be used for certain data elements. Much of this standard nomenclature is contained in computerized form in the EADS Terms data base and is reported in the EADS Terminology Reference Manual (EPA-600/8-80-011, February 1980). The TERMS data base is used by all waste stream data bases to check the validity of new data submitted for entry. It will be updated routinely as new terminology is needed.

4.2.1 Origin of the TERMS Data Base

The development of the EADS waste stream data bases identified several data variables requiring standard terminology to ensure proper selection during any data selection or retrieval activities. Tables of values for the standard nomenclature were compiled for each variable, and it became evident that several of the tables would be lengthy and would require frequent updating to be current with rapid changes in terminology. The computerization of the largest tables was recommended as the most cost-effective means of ensuring the availability of current information.

In addition, the fact that most users of the EADS will use the Terminology Reference Manual frequently, requires that this document be revised often. Clearly, the re-editing and recompilation of large volumes of data would be costly and time-consuming if done manually. Consequently, special computer programs were developed so that the tables can be generated directly from the TERMS data base. As the Terminology Reference Manual is revised, affected tables will be recreated and will completely replace the outdated tables.

4.2.2 Description of the TERMS Data Base

The TERMS data base is a SYSTEM 2000® data base, like the other EADS data bases; however, TERMS may undergo frequent structural revisions to add new tables as the need arises. The other EADS data bases are expected to be more stable. The tables included in the TERMS data base are described below.

The Chemical Data Table (CDT) is perhaps the most used table in the TERMS data base. The CDT identifies chemical compounds and species for entry to the EADS waste stream data bases by the MEG ID Number and the Chemical Abstracts Services (CAS) Registry Number. For each compound, the CDT reports the preferred name and any synonyms by which the compound is known, as well as the molecular weight and empirical formula. Whether or not the chemical is listed as a priority or hazardous pollutant is indicated. As new chemicals of special interest to EPA are identified, they will be added to the CDT.

The EADS waste stream data bases require that the type of industrial or energy process be clearly identified. To facilitate the identification of process sources, the Environmental Assessment Source Classification System (EASCS) was created. The components of the EASCS are Source Category, Source Type, Product/Device Type, and Process Type. Related to the EASCS, and included in the TERMS data base, is the Feed Material Category. These data elements are defined in the EADS User Guides, and in the glossary in the Appendix of this manual.

Information on control technology was also expected to change frequently; therefore, several tables were added to the TERMS data base. One table contains the Generic Type, Design Type, and Specific Process/Design Name for each media specific control technique.

A second table lists suggested design and operating parameters by Generic Type and Design Type. Related to control technology are tables for Device Class and Device/Process Category keywords. All of these data elements are defined in the glossary and in the EADS User Guides.

In the Liquid Effluents Data System (LEDS), the effluents characteristics data include the classic wastewater pollutants (e.g., Chemical Oxygen Demand, Total Suspended Solids). Codes for data entry are listed in the TERMS data base.

Bioassay tests have a unique terminology that is often difficult to use. A table for Bioassay Test Type and Bioassay Test Name is included in the TERMS data base.

In addition to providing direct support to the EADS waste stream data bases, the TERMS data base also supports another reference data base, the Project Profile System (see Section 4.3), and supports the data submittal and review cycle. The Project Profile checklist codes and descriptions are included for reference by the Project Profile System. Also, the EADS Error Messages reported in the EDIT program output and described in detail in the EADS User Guides are tablulated in the TERMS data base. The messages identify efforts in the use of the other standard nomenclature during the encoding of data for the waste stream data bases. This is described more completely in the EADS User Guides.

4.2.3 Applicability to the EADS

From the preceding discussions, the applicability of the TERMS data base to the EADS is clear. The successful processing of new field sampling data depends upon the TERMS data base to compare data fields for encoding errors. Also, when retrieving data, the use of standard nomenclature to describe data elements allows convenient searching and sorting of data.

Moreover, the availability of the TERMS data base allows for frequent updating of the EADS Terminology Reference Manual, to ensure that users have access to current documentation.

4.3 PROJECT PROFILE SYSTEM (PPS)

The Project Profile System (PPS) is a project management information system that has been developed primarily to support a single program: the Conventional Combustion Environmental Assessment (CCEA). The PPS contains data on projects conducted by EPA, DOE, etc., that pertain to the broad category of conventional combustion. These projects are grouped into nine different types as follows:

Fuels
Emissions/Effluents Monitoring
Sampling and Analysis Methods Development
Control Technology
Transport, Transformation, and Fate
Health Effects
Ecological Effects
Socio-economic Factors
Integrated Assessments

For the appropriate project types, much of the same terminology from the EADS waste stream data bases is used. The principal difference is that the PPS does not contain any numerical data; that is, the PPS may identify what pollutant was measured, but it will not report any concentration values. The PPS is used by the CCEA program to identify, catalog, and manage information on conventional combustion processes.

4.3.1 Origin of the PPS

The CCEA program demonstrates a comprehensive approach to identify, acquire, and analyze all information relevant to the environmental assessment of conventional combustion processes. The purpose is to provide to EPA, other Federal and State agencies concerned with environmental protection, combustion and control equipment designers and users, and other interested parties, valid, comprehensive information to form the basis for specifying those activities and procedures that will enable operation of such processes in a manner protecting human health and welfare, and the nation's air, water, and land resources.

Because of the fundamental importance and widespread use of combustion devices for energy production, industrial processing, space heating, and many other purposes, identification of potentially harmful substances released from combustion and ancillary equipment and processes is essential. Quantification of amounts released under various operating conditions is equally as important. This identification and quantification requires the application of, and quite often the development of, reliable and accurate techniques for sampling and analysis. The transport of pollutant species, distribution, and possible transformation of such species must be understood and quantified. The acute and chronic effects of pollutants on human health and on the ecosystem must be understood and quantified. Critieria for the quality of the media -- air, water, and land -- must be developed and specified as environmental goals set with due regard for human health, ecological integrity, and the realization that a careful balance must be maintained between a thriving, technology based society and its natural environment.

Comparing these environmental goals with the types and rates of emission of pollutant species from combustion sources burning various fuels provides a measure of the degree of control that must be employed to attain the desired goals. The availability of effective control devices and processes must be ascertained, and the necessary research and development stimulated to produce more effective controls where needed. Among the important outputs of the CCEA program are recommendations for environmental standards. These recommendations are based on the perceived scope of the environmental impact, the types of pollutants involved, and the state of the art of the control technology available with quantification of its cost, energy usage, and effectiveness.

Because of the complexity of the CCEA program and the large amount of information and data that must be assembled and analyzed to direct the program toward its objectives, it was hypothesized that a computer-based management information system could be a cost-effective tool for program management. Accordingly, a pilot-type demonstration using only a few projects to illustrate the method was proposed, authorized, and conducted. The demonstration proved the feasibility of the concept and the development of the PPS ensued.

4.3.2 Description of the PPS Data Base

The PPS is a SYSTEM 2000® data base that has been implemented on the UNIVAC 1100 computer system at EPA's National Computer Center, Research Triangle Park, NC. Detailed descriptions of the data base and available program library software may be found in the EADS User Guide: Project Profile System (PPS), EPA-600/8-80-037, June 1980. This discussion is intended only to provide a general overview of the types of data contained in the PPS.

The data stored in the PPS are compiled on the basis of projects instead of test sites as is the case of the EADS waste stream data bases. For example, the environmental assessment project for a particular industrial process may involve the sampling of many multimedia test sites, each of which would be reported separately in FPEIS, GEDS, LEDS, or SDDS. In the PPS, however, there would be only one entry for the overall project.

The organization structure of the PPS is shown in Figure 4-1. Each project entered into the data base is identified by a unique Project Profile Number (PPN). The PPN may be used to refer to a particular project profile when searching the data base or retrieving data. As seen in Figure 4-1, the top level or tier of each project profile contains administrative data on the project. These data include the identification of the contractor and sponsor, the period of performance, the level of funding, the contract number, etc. Any reports from the project are identified by title, author(s), publication date, etc., and a narrative abstract describes the nature of the project.

The second level reports on specific activities performed by the contractor during the course of the project. The nature of the data reported varies dramatically by project type. The third level reports specific programs or definable subsets of work under each activity. The fourth and lowest level in the structure describes the detailed attributes of the activity and program. For example, this level identifies any pollutants measured or examined, describes analyses performed, etc. In essence, it tells what was done or what the objective was.

This arrangement of information allows the user to track data from the most specific case upward through the hierarchical structure to the more general case. It provides maximum flexibility to the user in responding to a diverse area of inquiries. In an abstract sense, this may be somewhat difficult to visualize; however, Table 4-1 contains a list of the general types of data reported at each tier of the data base

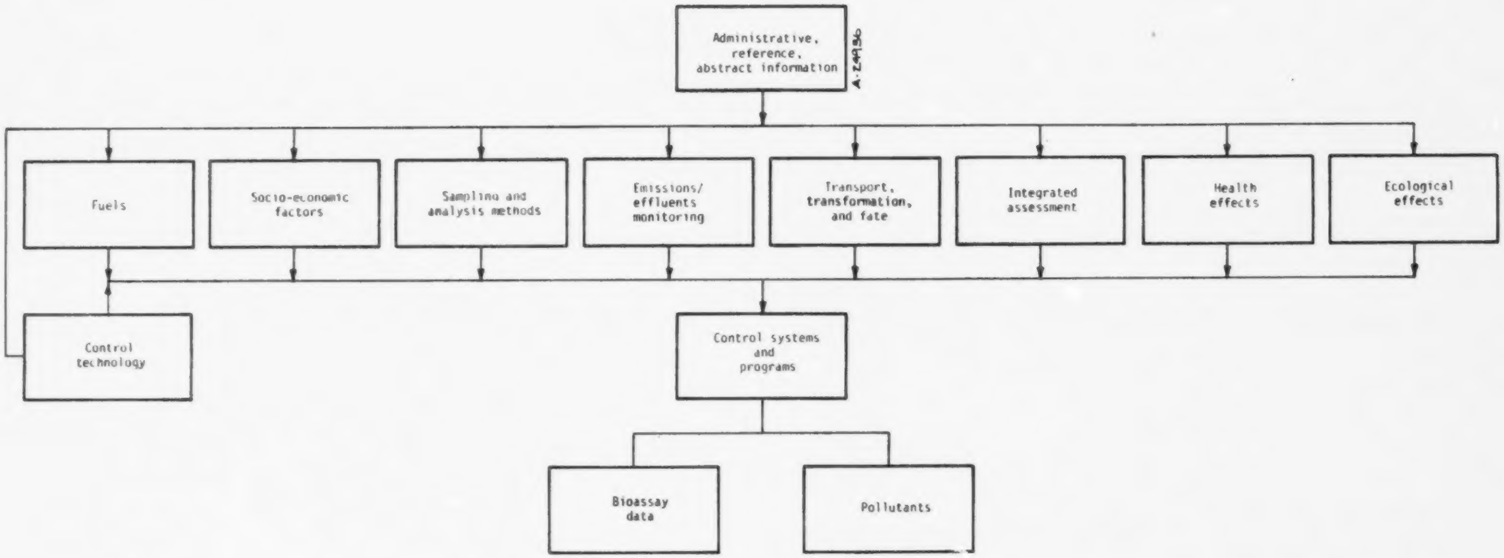
Administrative, reference, abstract information
A-24936
Fuels
Socio-economic factors
Sampling and analysis methods
Emissions/ effluents monitoring
Transport, transformation, and fate
Integrated assessment
Health effects
Ecological effects
Control technology
Control systems and programs
Bioassay data
Pollutants

Figure 4-1. Project Profile System Structure

Table 4-1. PPS Data Elements

Profile Level	Activity Level	Program Level	Pollutant Level
A. Project sponsor name, address, and Project Officer Contractor name, address, and Project Manager Contract number Start/finish date Funding, fiscal year Project type Profile element codes B. Report title, author(s), publication date and number C. Profile abstract	D. Source category, type, product/ device, process Feed material type, class Cross-reference TSN's (FPEIS, GEDS, SDDS, LEDS, FEIS) Site, analysis locations F. Project description, type Site description Activity frequency, objective Activity/event Scale/scope	E. Control technology generic type, design type, process name Media, media subclass F. Sampling/analysis techniques Scope Method Subject content Approach Issues	G. Bioassay test type, name Test strains/organisms H. Pollutant, pollutant code type Sampling technique code Analytical techniques code Sampling location code

structure. The actual data reported will vary according to the project type.

4.3.3 Applicability to the EADS

The PPS provides a guide or "road map" to combustion data stored in the EADS waste stream data bases. While the PPS identifies what work was done, the EADS waste stream data bases contain the actual results. In the context of the CCEA, the PPS will provide important initial information about projects relating to a particular aspect of conventional combustion (e.g., who did the work, were there any reports, what pollutants were measured, etc.). If there are sampling data in the EADS from that particular project, references to the EADS TSN's will be given in the Project Profile. In this way, the user can obtain the actual data if he wishes.

Of course, not all project types reported in the PPS will be relevant to the EADS waste stream data bases. An attempt has been made, however, to utilize the standard EADS terminology protocol described in the EADS Terminology Reference Manual, EPA-600/8-80-011, February 1980.

Should the need arise, the design of the PPS will allow its application to industrial source categories other than conventional combustion. For the present, though, the PPS will continue to support only the CCEA.

4.4 MULTIMEDIA ENVIRONMENTAL GOALS DATA SYSTEM (MEGDAT)

MEGDAT is a technical data base that contains comprehensive properties, toxicology, and regulatory data on organic and inorganic compounds and species. These data provide basic reference information to users of the EADS waste stream data bases who may wish to perform different analyses using the data, such as determination of acute or chronic effects due to exposure to a possibly hazardous pollutant.

4.4.1 Origin of MEGDAT

The MEGDAT data base represents the result of the decision by IERL/RTP to computerize the Multimedia Environmental Goals (MEG's) data developed by Research Triangle Institute as part of the methodology of the IERL/RTP EA program for energy processes. The concept of the MEG's is described in detail in Cleland, J. G., and G. L. Kingsbury, Multimedia Environmental Goals for Environmental Assessment, Volumes I and II, Industrial Environmental Research Laboratory, U.S. Environmental Protection Agency, Research Triangle Park, NC. EPA-600/7-77-136a,b (November 1977).

In this synopsis of the MEGDAT data base, the background discussion on the MEG's will be kept necessarily brief.

To provide for comprehensive environmental assessments, the Industrial Environmental Research Laboratory at Research Triangle Park has developed a protocol to facilitate quantitative evaluation and comparison of streams and processes with respect to their potential environmental impacts. The methodology prescribes a systematic approach to the interpretation of data obtained in environmental assessment projects. In order to fully characterize waste streams for environmental assessment, pollutant levels must be related to their environmental effects. The development of MEG's is a first attempt at a procedural approach to evaluate and rank a large number of pollutants for the purpose of environmental assessment.

MEG's are defined as levels of contaminants or degradents (in ambient air, water, or land or in emissions or effluents conveyed to ambient media) that will not produce negative health or ecological effects in the surrounding environment, or that represent control limits demonstrated to be achievable through state-of-the-art technology. Emphasis thus far in the MEG's development has been focused on specifying three types of goals: levels desirable in ambient media, existing levels of ambient media (natural background), and levels believed safe for exposure of limited duration.

The primary objective in compiling MEG's has been to provide an index to allow quantitative comparison and evaluation of the hazards posed by a large number of chemical substances. The MEG's project began with the compilation of a list of chemical contaminants associated with fossil fuel processes. The more than 600 chemicals on the list were organized into categories effectively grouping chemically and toxicologically similar substances. (Identification numbers for specific compounds were subsequently assigned on the basis of the category organization.) In the next step of the MEG's development, existing Federal regulations and guidelines applicable to chemical substances were assembled. Other types and sources of available information relevant to environmental goals were also identified. Finally, a suitable presentation format, the MEG chart, was adopted, and a one-page information summary was prepared to accompany and support the numerical goals for each chemical. The disadvantages of this format were soon discovered as the original list of compounds was expanded. The computerization of all the MEGs was determined to be the most effective means of updating new MEG data and disseminating information to the environmental assessment user community. Thus, the concept of MEGDAT was born.

4.4.2 Description of MEGDAT

Like the other EADS data bases, MEGDAT is a SYSTEM 2000® data base, and MEGDAT is structured in a hierarchical or tiered manner. The data are organized according to specific compounds or elements. Thirteen separate categories of information may be reported for each chemical listed in the data base. These information types and the specific data supplied are given in Table 4-2. The 13 information types are stored according to the data base structure shown in Figure 4-2.

Each compound or chemical species stored in MEGDAT is identified by a unique, six-character MEG ID Number. While the Chemical Abstracts Services Registry Number is also reported for each chemical, the MEG ID has been designed to further classify the chemical as a member of a family or class of compounds. The first two characters of the MEG ID identify the Category of the compound. For example, Category 01 identifies aliphatic hydrocarbons. Addition of the third character of the MEG ID provides the Sub-Category. Following the same example, 01A identifies alkanes and cyclic alkanes; 01B identifies alkenes, cyclic alkenes, and dienes; and 01C identifies alkynes. The last three characters identify a specific compound (e.g., 01B062 identifies Cis-2-Butene). As seen from Table 4-2, MEGDAT may report a wealth of information about chemical compounds. A detailed discussion of those data is beyond the scope of this synopsis. The reader is referred to the aforementioned report or to the EADS User Guides for more detail.

Table 4-2. Types of Information Supplied in the MEGDAT Data Base

Information Type	Specific Data Supplied
Identifying information	Category; subcategory; identification number; preferred chemical name; subspecies; formula; synonyms; description; WLN
Properties	Atomic number; periodic group; atomic weight; molecular weight; melting point; freezing point; boiling point; density; vapor density; vapor pressure; solubility in water; solubility in liquid; octanol partition coefficient; pK_a; pK_b
Characteristics, associated compounds	Chemical characteristics; compound associations; mineral associations; formation; characteristic chemical reactions; biodegradability; persistence in atmosphere; metabolites; precursors
Occurrence in air	Rural; urban; industrial air concentration ($\mu g/m^3$); odor threshold
Occurrence in water	Level identified in drinking water, surface water, ground water, seawater, or estuarine ($\mu g/\ell$)
Occurrence in land	Typical level in soil ($\mu g/g$); occurrence in marine sediments, or earth's crust; association with coal or petroleum
Other occurrences	Occurrence in food, body, aquatic organisms, and vegetation; dietary intake/nutrient value; total intake; uses, production, etc.; sources
Human toxicity data	Compounds likely to be toxicologically similar; acute human effects; chronic human effects; relative toxicity of associated CPDS; bioaccumulation; biological half-life, reported no-effect dosages; synergisms/antagonisms; absorption routes
Animal toxicity data	Acute effects; chronic effects; no-effect levels; LD_{50} or lowest lethal dose (mg/kg, oral rat data preferred); lowest lethal concentration or LC_{50} (mg/m^3); lowest toxic concentration reported (mg/m^3)
Information relative to genotoxic potential (Oncogenicity, teratogenicity, mutagenicity)	Evidence of carcinogenicity or teratogenicity (associated cpds. considered); evidence of noncarcinogenicity; EPA/NIOSH ordering number (based on oncogenicity or teratogenicity); lowest dosage producing oncogenic or teratogenic response (mg/kg); adjusted ordering number (based on oncogenicity or teratogenicity); evidence of mutagenicity; results of Ames' Test
Aquatic toxicity	TLM-96 (ppm); sublethal effects; bioaccumulation potential; fish tainting level (ppm); fish tainting, qualitative information
Phytotoxicity	Effects of vegetation (air [$\mu g/m^3$], irrigation, nutrient solutions, soil)
Standards, criteria, recommendations, recognition	Primary and Secondary Ambient Air Quality Standards; National Emission Standards for Hazarous Air Pollutants; TLV (established by ACGIH); ACGIH designation as simple asphixiant or carcinogen; subject of NIOSH criteria document or hazard review document; OSHA designation as cancer suspect agent; NIOSH recommendation; drinking water standards or criteria; water quality criteria for protection of aquatic life, protection of livestock, or irrigation; Toxic Pollutant Effluent Limitations; Recommendations of U.S. Dept. of Agriculture and Land-grant Institutions; FDA declarations; included in National Cancer Institute list of carcinogens to man; included in EPA Consent Decree List; Chemical Industry Institute of Toxicology recognition

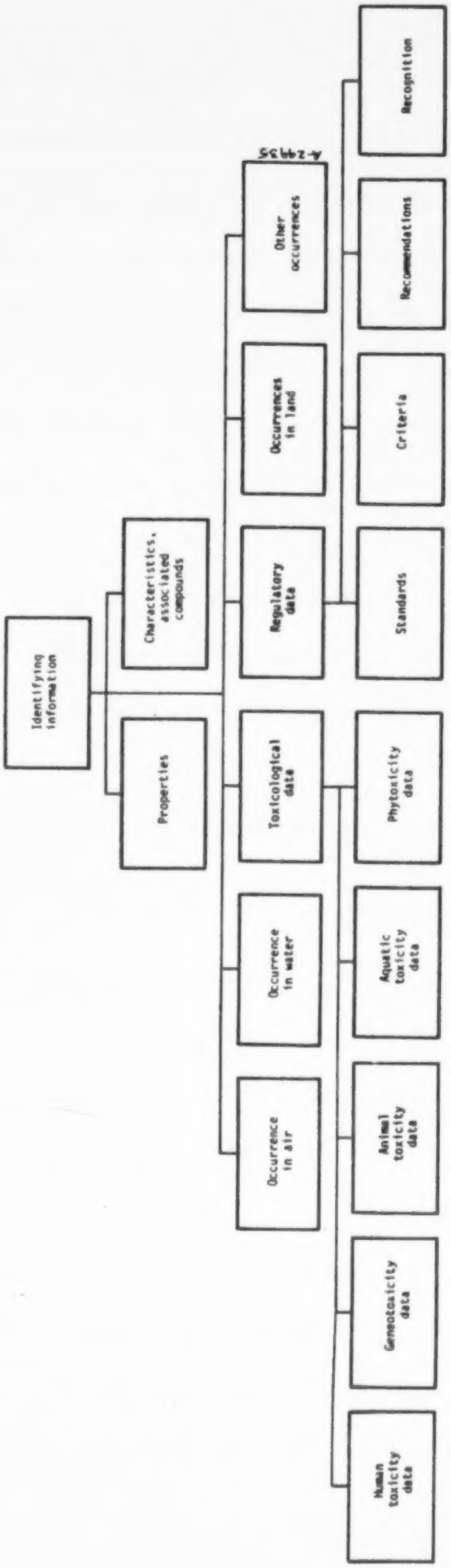
A-24935
Identifying information
Properties
Characteristics, associated compounds
Occurrence in air
Occurrence in water
Toxicological data
Regulatory data
Occurrences in land
Other occurrences
Human toxicity data
Genotoxicity data
Animal toxicity data
Aquatic toxicity data
Phytoxicity data
Standards
Criteria
Recommendations
Recognition

Figure 4-2. MEGDAT Data Base Structure

4.4.3 Applicability to the EADS

Utilization of MEGDAT data in conjunction with data from the EADS waste stream data is expected to be extensive. MEGDAT data will be particularly applicable to computations that require exposure limits for certain chemicals so that the environmental impacts of multimedia discharge streams may be determined. Such computations, models, etc., are varied in nature. Attempting to discuss all possible uses of the data in those applications is impractical here. As new user programs are added to the Program Library (described in Section 5) for each data base, any involvement of MEGDAT will be defined clearly.

MEGDAT is unique in that it contains both toxicological data and regulatory data. Clearly, there are other data bases available to the user which contain more comprehensive properties data, health effects data, ecological data, etc., separately, but it is unlikely that these other data bases contain as much detail on such a variety of subjects as MEGDAT. There is great utility in having a single source of comprehensive data.

It must be acknowledged, however, that despite its comprehensiveness, MEGDAT is rather narrow in scope at present. The focus to date in compiling data for entry to MEGDAT has been on those compounds pertaining to energy processes, and it is recognized that these represent only a small fraction of the thousands of chemical substances that may adversely impact the environment. MEGDAT will be expanded to include chemicals found in or produced by other industrial processes. The extent to which new data are added will depend upon the need and the availability of resources to do the job. It is very unlikely that MEGDAT data will be compiled on all chemical substances; however, no limit on the number of chemicals to be reported in MEGDAT has been set.

SECTION 5.0

PROGRAM LIBRARY

5.1 INTRODUCTION

The usefulness and usability of industrial discharge data which have been compiled into a computerized information system are limited if the data cannot be retrieved and utilized to answer questions that a user might have. As discussed previously, the employment of the SYSTEM 2000® data base management system provides a flexible set of commands that can often answer many questions. SYSTEM 2000® Natural Language, as this command language is called, is a powerful tool for the knowledgeable user; that is, the user who is familiar with or has received training in the use of SYSTEM 2000®. Most EADS users are not likely to undertake training in the use of SYSTEM 2000® Natural Language, nor should these users be expected to have any particular expertise in the use of computers or computer programs. This means than no user of the EADS should be required to have any special computer-related training in order to use the EADS data bases.

In order to provide greater flexibility to the user and to simplify the retrieval of data, an extensive program library has been developed for the EADS. The programs described in the following subsections are applicable to one or more of the waste stream data bases contained in the EADS.

Each entry in the program library is described by a brief abstract which identifies in general terms the input required from the user and the output to be expected. The details of each Program Library entry are given in the EADS User Guides.

As new user programs are developed and made available to the EADS user community, this section will be expanded.

5.2 SERIES REPORT

5.2.1 Applicability: FPEIS, GEDS, LEDS, SDDS

5.2.2 Abstract

The SERIES Report is the basic report for the EADS waste stream data bases. This report lists all of the data contained in the test series by stream, test operating level, and sample. The length of the SERIES Report will depend upon the quantity of data contained in the test series.

The format of the SERIES Report follows the structure of the EADS data base. The first page of the report describes the source that was sampled, identifies the sponsor of the testing and the organization which did the actual testing, and provides any commentary on the test series which was included. Beginning with the second page, the report describes the effluent stream level, including the control/treatment technology design parameters. Following this, the testing operating level is reported which includes the control/treatment technology operating parameters and the description of the source fuel or feed material. Next, the sample level and any subsequent components are described. These data include the chemical, radiological, and biological analysis results. The chemical data may include Level 1 Environmental Assessment data as well as compound-specific data for inorganics and organics. The chemical and radiological data for various sampling components are summarized by chemical/radiological species (or Level 1 fraction).

For the FPEIS, the SERIES Report provides calculated particle size distributions for impaction-type sampling equipment including cumulative mass concentrations, geometric mean diameters, etc. Where other types of samples are used, the mass or number concentration is provided. The data are given as a function of particle size; that is, as a function of components of the sampling system.

Using the EADS waste stream data base name and the TSN, the selected test series is retrieved and printed in its entirety. Multiple SERIES Reports may be initiated during one session. The SERIES Report may be run by inputting the TSN and the data base name. The report may be initiated only through a "demand" terminal session although the SERIES program is only executed as a batch job. The demand session gives complete instructions for using the SERIES Report program. The SERIES Report program user has several printing options available, including the National Computer Center local printers, remote high-speed terminal printers, and low-speed time-sharing (demand) terminals. Because of the length of the SERIES Report for most of the test series, it is recommended that the low-speed terminal option be avoided where possible.

5.3 CHEMICAL SEARCH PROGRAM

5.3.1 Applicability: FPEIS, GEDS, LEDS, SDDS

5.3.2 Abstract

The Chemical Search Program (CHEM-SEARCH) enables the user to search all or part of the EADS waste stream data bases to determine the presence of a particular chemical species. The user may identify the chemical species by its CAS Number, its MEG Number, or its empirical formula. If a search is to be made of part of a data base, the data base name must be given and the range of TSN's must be specified. Both demand and batch versions of the program are available to the user. The demand version provides complete instructions on the use of the program through an interactive interface with the user. A "Help" command is also available to users who encounter problems.

Using the user-supplied data on a particular chemical species, the CHEM-SEARCH program initially checks the EADS Chemical Data Table (CDT), which is listed in the Terminology Reference Manual, to verify that a valid species has been requested. If so, both the MEG ID and CAS Number are retrieved. The program next scans all of the data bases specified using both the MEG ID and the CAS Number to search for the chemical. If at least one occurrence of the species is found within a test series, that test series is listed in the output. If no data are found in the entire data base, this fact is also listed in the output.

The user is cautioned to use care when selecting the Empirical Formula format option for organic compounds. Since several organic compounds of the same class may have the same formula (e.g., isomers), it would likely be safer to search on the basis of the MEG ID or the CAS Number.

The output from the CHEM-SEARCH program provides additional information on the chemical species selected, including the MEG ID Number, CAS Number, empirical formula, preferred name, molecular weight, other names by which the chemical is known, and whether or not the chemical is designated as a priority pollutant, hazardous pollutant, or both. For each data base scanned, the TSN is listed for those test series in which the chemical of interest is reported. The program does not report the concentration of the chemical species. The selection criteria require only that the chemical species be found once in a given test series even though multiple occurrences of the chemical may be present. It is recommended that the user request the SERIES Report for each test series identified in order to get more information.

5.4 SERIES SUMMARY INFORMATION PROGRAM

5.4.1 Applicability: FPEIS, GEDS, LEDS, SDDS

5.4.2 Abstract

The Series Summary Information Program (SNAP-SHOT) is a brief report which summarizes the contents of an EADS test series. The report gives an indication of "what" is contained in the test series without getting into details. It will provide the user with an overview of the test series in a brief format that would ordinarily require the obtaining of a more detailed and lengthy SERIES Report.

The format of the SNAP-SHOT Report follows the SERIES Report very closely; it is as if a "snap-shot" had been made of the SERIES Report. The first page of the SNAP-SHOT Report is the same as the first page of the SERIES Report; that is, the source that was sampled is described in terms of its industrial categorization and location (if available), the sponsor of the testing and the organization which performed the work are identified, and any comments on the test series are provided. Any EADS test series which contains data from other media that were collected at the same time are identified, and a list of references pertaining to the test series is provided. Next, a summary of the data to be found in the test series is given, including the type of waste or product streams reported, the type of control technology applied (if any), the number of discrete samples collected and whether they were collected from a control system inlet or outlet, and whether or not data are present for the sample on the results of inorganic/non-Level 1 organic analysis, Level 1 organic analysis, radionuclide analysis, and bioassay. Finally, the total number of effluent or product streams is given along with the total number of samples reported.

The SNAP-SHOT program may be qualified by any combination of five parameters to select several test series, or a specific range of TSN's may be specified by the user. The five parameters which may be chosen are as follows:

Source Category
Source Type
Product/Device
Process Type
Feed Material Category

Acceptable data for these parameters may be found in the Terminology Reference Manual in Table A-1 for the first four parameters and in Table A-2 for the Feed Material Category. The user may specify any combination of these parameters to retrieve summary information from a particular data base. For example, a user may request SNAP-SHOT reports for all test series where the Source Type equals UTILITY, Product/Device equals BOILER, and Feed Material Category equals COAL; that is, the user wants to identify all test series on coal-fired, utility boilers. The user is not required to utilize this parameter option. He may instead specify a single TSN or a range of TSN's.

The SNAP-SHOT program may be initiated either through a "demand" (time-sharing) session or through submitting a batch job. The demand version of the program prompts the user with complete instructions for its use.

The SNAP-SHOT program user has several printing options available including the National Computer Center local printers, remote high-speed terminal printers, and low-speed time-sharing (demand) terminals. While the SNAP-SHOT Report itself is not long (usually two to three pages), the volume of output could become voluminous, particularly if the Parameters Option is selected and the subsequent retrieval involves many test series. Unless the user is selecting a specific test series, it is recommended that the low-speed terminal option be avoided where possible.

5.5 BIOLOGICAL SEARCH PROGRAM

5.5.1 Applicability: FPEIS, GEDS, LEDS, SDDS

5.5.2 Abstract

The Biological Search Program (BIO-SEARCH) enables the user to search all or part of the EADS waste stream data bases to determine the presence of the results of a particular bioassay test. The user may identify the bioassay results either by specifying the type of bioassay or the specific test name as found in the EADS Terminology Reference Manual Tables A-11 and A-12, respectively. If a search is to be made of part of a data base, the data base name must be given and the range of TSN's must be specified. Both demand and batch versions of the program are available to the user. The demand version provides complete instructions on the use of the program through an interactive interface with the user. A "Help" command is also available to users who encounter problems.

Using the user-supplied data on a particular bioassay test type or test name, the BIO-SEARCH program initially checks the data to verify that a valid bioassay test type or name has been requested. The program next scans all of the data bases specified using either the test type or the test name. The program does not report the results of the biological tests. The selection criteria require only that a bioassay be found once in a given test series even though multiple occurrences of the assay may be present. It is recommended that the user request the SERIES Report for each test series identified in order to get more information.

5.6 RADIOLOGICAL SEARCH PROGRAM

5.6.1 Applicability: FPEIS, GEDS, LEDS, SDDS

5.6.2 Abstract

The Radiological Search Program (RAD-SEARCH) enables the user to search all or part of the EADS waste stream data bases to determine the presence of a particular radionuclide. The user may identify the radionuclide by its chemical symbol and isotope (mass) number in the form XX-NNN. If a search is to be made of part of a data base, the data base name must be given and the range of TSN's must be specified. Both demand and batch versions of the program are available to the user. The demand version provides complete instructions on the use of the program through an interactive interface with the user. A "Help" command is also available to users who encounter problems.

For each data base scanned, the TSN is listed for those test series in which the radionuclide of interest is reported. The program does not report the concentration of the radionuclide species. The selection criteria require only that the radionuclide species be found once in a given test series even though multiple occurrences of the radionuclide may be present. It is recommended that the user request the SERIES Report for each test series identified in order to get more information. If no data are found in the entire data base, this fact is also listed in the output.

5.7 WASTEWATER CONVENTIONAL POLLUTANTS SEARCH PROGRAM

5.7.1 Applicability: LEDS

5.7.2 Abstract

The Wastewater Conventional Pollutants Search Program (WATER-SEARCH) enables the user to search all or part of the LEDS data base to determine the presence in a test series of a specified conventional (classic) pollutant. The user may select a code from a list of conventional pollutants provided by the program. Once the code is entered, the user may request that all of the data base be searched or he may enter a range of TSN's to be scanned.

Using the code supplied for the conventional pollutant by the user, the WATER-SEARCH program first validates the code to ensure that no error has occurred. Next, the program scans the LEDS data base to search for the conventional pollutant. The program does not report the concentration of the pollutant. The selection criteria require only that the conventional pollutant be found once in a given test series even though multiple occurrences of the pollutant may exist in the same test series. It is recommended that the user request the LEDS SERIES Report for each test series identified in order to obtain more information.

The program is available both in batch and demand (time-sharing) versions. The demand program contains instructions for using the program. The computer will prompt the user for responses to questions about the input data.

5.8 CONTROL TECHNOLOGY SEARCH PROGRAM

5.8.1 Applicability: FPEIS, GEDS, LEDS, SDDS

5.8.2 Abstract

The Control Technology Search Program (CONTROL-SEARCH) enables the user to search all or part of the EADS waste stream data bases to determine the presence of a particular control technology. The user may identify the control technology by specifying either the generic device type or the design type as given in Table A-4 of the EADS Terminology Reference Manual. If a search is to be made of part of a data base, the data base name must be given and the range of TSN's must be specified. Both demand and batch versions of the program are available to the user. The demand version provides complete instructions on the use of the program through an interactive interface with the user. A "Help" command is also available to users who encounter problems.

The user is cautioned to use care when selecting the Design Type option for control technology. Since several generic control system types have the same or similar design types, it would likely be safer to search on the basis of the generic type only, or thoroughly check the Terminology Reference Manual to be certain of the correct Design Type value.

Using the user-supplied data on a particular control technology, the CONTROL-SEARCH program initially checks to verify that a valid Generic Device Type or Design Type has been requested. The program next scans all of the data bases specified. If at least one occurrence of the generic type or design type is found within a test series, that test series is listed in the output. If no data are found in the entire data base, this fact is also listed in the output.

APPENDIX A.1

EADS DATA INPUT FORMS

EPA EADS FPEIS

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FINE PARTICLE EMISSIONS INFORMATION SYSTEM
DATA INPUT FORMS

FORM 1 2/80

Form Completed by

A - SOURCE DESCRIPTION

Test Series No.		Card No.	Source Category	Source Type	Product/Device Type	SIC Code
1 2 3 4 5 6	7 8 9 10 11 12 13	14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55	56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75	76 77 78 79 80
F		A 0				

Card No.	Process Type	Design Process Rate	Process Rate Units	Feed Material Category	Source Name
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	36 37 38 39 40 41	42 43 44 45 46 47	48 49 50 51 52 53 54 55	56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
A 1					

Card No.	Site Name	Street/Box Number	City	State
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78	79 80
A 2				

Card No.	Zip Code	Country	FPEIS TSN	SDDS TSN	GEDS TSN	LEDS TSN	NPDES Number	Start Date Mo Da Yr	Finish Date Mo Da Yr	
14 15	16 17 18 19 20	21 22 23 24 25	26 27 28 29 30	31 32 33 34 35	36 37 38 39 40	41 42 43 44 45	46 47 48 49 50 51 52 53 54	55 56 57 58 59 60	61 62 63 64 65 66	67 68 69 70 71 72 73 74 75 76 77 78 79 80
A 3										

Card No.	Sponsor Organization	Contract Number	TO/TD Number	Name of Sampling Group/Contractor
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45	46 47 48 49 50 51 52 53 54 55	56 57 58	59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
A 4				

Card No.	Reference Report Title
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
A 5	
A 6	

Card No.	Reference Report Author	Reference Report Number	Reference Report Publication Date
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45	46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65	66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
A 7			

Card No.	Reference Report NTIS Number	
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
A 8		

B - TEST SERIES COMMENTS

Test Series No.		Card No.	Line No.	Comments as Text
1 2 3 4 5 6	7 8 9 10 11 12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
F		B 0		
		B 0		
		B 0		
		B 0		
		B 0		

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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C - STREAM DESIGN CHARACTERISTICS

Test Series No.	Stream No.		Card No.	Flowrate*	Flowrate Units*	Velocity*	Temperature*	Pressure*	Moist. Con.*	Stack Height*	Stream Name*
1 2 3 4 5 6	7 8	9 10 11 12 13	14 15	16 17 18 19 20 21	22 23 24 25 26 27	28 29 30 31	32 33 34 35	36 37 38	39 40 41	42 43 44 45 46	47–80
C			C 0	▲		▲		▲	▲	▲	

Card No.	Stream Comments as Text*
14 15	16–80
C 1	
C 2	

D - CONTROL DEVICE/TREATMENT PROCESS

Test Series No.	Stream No.		Card No.	Device No.	Generic Device/Process Type	Design Type	
1 2 3 4 5 6	7 8	9 10 11 12 13	14 15	16 17	18–37	38–70	71–80
F			D 0				

Card No.	Specific Process/Device Type	Device/Process Class	Device/Process Commercial Name	
14 15	16–35	36–47	48–77	78 79 80
D 1				

Card No.	Manufacturer	
14 15	16–45	46–80
D 2		

Card No.	Seq. No.	Device/Process Keyword	Seq. No.	Device/Process Keyword	
14 15	16 17	18–47	48 49	50–79	80
D 3					
D 3					
D 3					

D - CONTROL DEVICE/PROCESS DESIGN PARAMETERS

Test Series No.	Stream No.		Card No.	Parameter No.	Design Parameter Name	Value Type	Parameter Value ±	Parameter Value Text/Units
1 2 3 4 5 6	7 8	9 10 11 12 13	14 15	16 17	18–47	48	49 50 51 52 53 54 55 56	57–80
F			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	

*Denotes Repetitive Data Feature at Stream Level

NOTE: When encoding data, use a ∅ for alpha character and 0 for numeric zero.

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E - TEST IDENTIFICATION

	Test Series No.	Stream No.	Test ID. No.		Card No.	Test Date Mo	Da	Yr	Start Time	End Time	Operating Mode*	% Design Capacity*	
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19	20 21	22 23 24 25	26 27 28 29	30–60	61 62 63 64	65–80
F					E 0							▲	

E - CONTROL DEVICE/PROCESS OPERATING PARAMETERS

	Test Series No.	Stream No.	Test ID. No.		Card No.	Device/Process Number	
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18–80
F					E 1		

Card No.	Operating Parameter Number	Operating Parameter Name*	Value Type	Parameter Value $	±		Operating Parameter Text/Units
14 15	16 17	18–47	48	49 50 51 52	53	54 55 56	57–80
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		

Card No.	Device/Process Number	
14 15	16 17	18–80
E 1		

Card No.	Operating Parameter Number	Operating Parameter Name*	Value Type	Parameter Value $	±		Operating Parameter Text/Units
14 15	16 17	18–47	48	49 50 51 52	53	54 55 56	57–80
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		

Card No.	Comments as Text*
14 15	16–80
E 7	
E 8	
E 9	

*Denotes Repetitive Data Feature at Test Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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F - FUELS AND FEEDSTOCKS

Test Series No. (1–6)	Stream No. (7–8)	Test ID. No. (9–11)	(12–13)	Card No. (14–15)	Source Feed Material* (16–45)	Feed Material Rate & Units* (46–62)	Feed Material Sample Mass* (63–67)	Feed Material Mass Units* (68–73)	Seq. No. (74–80)
F				F 0					

Card No. (14–15)	Laboratory Name* (16–55)	QA/QC Code (56–58)	Feed Material Sample Volume* (59–63)	Volume Units* (64–70)	Seq. No. (71–80)
F 1					

F - FUELS AND FEEDSTOCKS — PROXIMATE ANALYSIS

Test Series No. (1–6)	Stream No. (7–8)	Test ID. No. (9–11)	(12–13)	Card No. (14–15)	Proximate Analysis Parameter (16–31)	Value* (32–38)	Units (39–42)	Proximate Analysis Parameter (43–61)	Value* (62–68)	Units (69–73)	Seq. No. (74–80)
F				F 2	MØISTURE		%WT	ASH		%WT	
				F 2	VØLATILE MATTER		%WT	FIXED CARBØN		%WT	
				F 2	SULFUR		%WT	HEAT CØNTENT		KJ/KG	
				F 2	SPECIFIC GRAVITY						

F - FUELS AND FEEDSTOCKS — ULTIMATE ANALYSIS

Test Series No. (1–6)	Stream No. (7–8)	Test ID. No. (9–11)	(12–13)	Card No. (14–15)	Ultimate Analysis Parameter (16–25)	Value* (26–30)	Ultimate Analysis Parameter (31–40)	Value* (41–45)	Ultimate Analysis Parameter (46–55)	Value* (56–60)	Ultimate Analysis Parameter (61–70)	Value* (71–75)	Seq. No. (76–80)
F				F 3	CARBØN		HYDRØGEN		SULFUR		NITRØGEN		
				F 3	ASH		CHLØRINE		MØISTURE		ØXYGEN		

F - FUELS AND FEEDSTOCKS — CHARACTERISTICS

Test Series No. (1–6)	Stream No. (7–8)	Test ID. No. (9–11)	(12–13)	Card No. (14–15)	Parameter Name (16–27)	Value Type* (28)	Value* $ ± (29–36)	Units* (37–)	Analytical Method* (–56)	High Detection Limit* ± (57–64)	Low Detection Limit* ± (65–72)	Detection Limit Units* (73–79)	Seq. No. (80)
F				F 4			E			E	E		
				F 4			E			E	E		
				F 4			E			E	E		
				F 4			E			E	E		
				F 4			E			E	E		
				F 4			E			E	E		
				F 4			E			E	E		
				F 4			E			E	E		
				F 4			E			E	E		
				F 4			E			E	E		
				F 4			E			E	E		
				F 4			E			E	E		

*Denotes Repetitive Data Feature at Test Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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F - FUELS AND FEEDSTOCKS - CHEMICAL ANALYSIS

Test Series No. (1-6)	Stream No. (7-8)	Test ID. No. (9-11)	(12-13)	Card No. (14-15)	Chemical ID Type (16)	Category/Species ID (17-26)	Analytical Method (27-28)	High Detection Limit (29-33)	± (34-36)	Low Detection Limit (37-41)	± (42-44)	Detection Limit Units (45-52)	Total Milligrams Recovered (53-60)	≤ (61)	Actual Concentration (62-65)	± (66-68)	Actual Concentration Units (69-79)	Seq. No. (80)
F				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
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				F 5				E		E					E			
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				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			
				F 5				E		E					E			

F - FUELS AND FEEDSTOCKS - COMMENTS

Test Series No. (1-6)	Stream No. (7-8)	Test ID. No. (9-11)	(12-13)	Card No. (14-15)	Comments as Text * (16-79)	Seq. No. (80)
F				F 7		
F				F 8		
F				F 9		

*Denotes Repetitive Data Feature at Test Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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H - SAMPLING ACTIVITY DESCRIPTION

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Method Type (I = Inertial Impaction, X = Other)	Measurement Instrument / Method Name*	Sampling Start Time	Sampling Duration* (Min)	Meas. Stream Velocity*	Meas. Stream Temp.*	Meas. Stream Pressure*	Meas. Stream Moist. Con.*	Meas. Stream Density*	Density Determination*	Sample Volume	
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46	47 48 49 50	51 52 53	54 55 56 57	58 59 60 61	62 63 64	65 66 67	68 69 70	71	72 73 74 75 76	77 78 79 80
P				H 0												

Card No.	Meas. Stream Flowrate*	Flowrate Units*	Flowrate Measurement Method*	Sample Total Mass*	Mass Units*	
14 15	16 17 18 19 20 21	22 23 24 25 26 27	28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	48 49 50 51 52	53 54	55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 1						

Card No.	Sampling Location Code	Device/Process Number	Sampling Location Description*	Instrument Temp.	Instr. Press.	Instrument Flowrate	
14 15	16	17 18	19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	48 49 50 51 52	53 54 55	56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 2							

Card No.	% Iso-kinetic*	CO_2*	CO*	O_2*	N_2*	Dilution Factor*	Particle Diameter Basis*	Particle Concentration Basis*	Upper Diameter Boundary*	Calibration/Calculation*	
14 15	16 17 18	19 20 21 22	23 24 25 26	27 28 29 30	31 32 33 34	35 36 37 38 39	40	41	42 43 44 45 46	47	48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 3											

Card No.	Trace Gases in PPM*
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 4	

Card No.	Collection Surface/Substrate*	
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70	71 72 73 74 75 76 77 78 79 80
H 5		

Card No.	Comments as Text*
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 6	
H 7	
H 8	
H 9	

*Denotes Repetitive Data Feature at Sample Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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FINE PARTICLE EMISSIONS INFORMATION SYSTEM
DATA INPUT FORMS

FORM 7 2/80

Form Completed by

K - COMPONENT

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Component Name	Stage/ Filter Cut Size	Stage Weight or Concentration ≤ ±	Chemical Analysis Laboratory Name*
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18–29	30 31 32 33	34–41	42–80
F					K 0				E	

Card No.	Component Sequence Number	Chem. QA/QC Code	Rad. QA/QC Code	Radiological Analysis Laboratory Name*	Component (Aliquot) Mass/Volume	Mass/Volume Units	
14 15	16 17	18 19 20	21 22 23	24–63	64–70	71–75	76–80
K 1							

K - EFFLUENT CHARACTERISTICS

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Effluent Parameter Name	Value Type*	Value*	Value Units*	Analytical Method*	High Detection Limit* ±	Low Detection Limit* ±	Detection Limit Units*	
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18–29	30	31–35	36–43	44	45–53	54–60	61–69	70–80
F					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		
					K 2							E	E		

K - EFFLUENT CHARACTERISTICS COMMENTS

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Comments as Text
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18–80
F					K 3		
F					K 4		

*Denotes Repetitive Data Feature at Component Level

NOTE: When encoding data, use a Ø for alpha characters and 0 for numeric zero.

ATTENTION FPEIS USER: Use Form 7A if no chemical or radiological data are to be reported. Otherwise, use Form 7, 8, 9, and 10 as needed for any component of the measurement instrument/method.

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FINE PARTICLE EMISSIONS INFORMATION SYSTEM
DATA INPUT FORMS

FORM 7a 2/80

Form Completed by

K - PARTICLE SIZE DISTRIBUTION DATA

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Component Name	Stage/ Filter Cut Size (μ m)	Stage Weight/ Concentration ≶ ±	
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29	30 31 32 33	34 35 36 37 38 39 40 41	42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
F					K 5	0 1			E	
					K 5	0 2			E	
					K 5	0 3			E	
					K 5	0 4			E	
					K 5	0 5			E	
					K 5	0 6			E	
					K 5	0 7			E	
					K 5	0 8			E	
					K 5	0 9			E	
					K 5	1 0			E	
					K 5	1 1			E	
					K 5	1 2			E	
					K 5	1 3			E	
					K 5	1 4			E	
					K 5	1 5			E	
					K 5	1 6			E	
					K 5	1 7			E	
					K 5	1 8			E	
					K 5	1 9			E	
					K 5	2 0			E	
					K 5	2 1			E	
					K 5	2 2			E	
					K 5	2 3			E	
					K 5	2 4			E	
					K 5	2 5			E	
					K 5	2 6			E	
					K 5	2 7			E	
					K 5	2 8			E	
					K 5	2 9			E	
					K 5	3 0			E	
					K 5	3 1			E	
					K 5	3 2			E	
					K 5	3 3			E	
					K 5	3 4			E	
					K 5	3 5			E	
					K 5	3 6			E	
					K 5	3 7			E	
					K 5	3 8			E	
					K 5	3 9			E	
					K 5	4 0			E	

NOTE: When encoding data, use a Ø for alpha characters and 0 for numeric zero.

ATTENTION FPEIS USER: Use Form 7A if no chemical or radiological data are to be reported. Otherwise, use Form 7, 8, 9, and 10 as needed for any component of the measurement instrument/method.

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FINE PARTICLE EMISSIONS INFORMATION SYSTEM
DATA INPUT FORMS

FORM 8 2/80

Form Completed by

L - INORGANIC ANALYSIS/NON-LEVEL 1 ORGANIC ANALYSIS

Test Series No.	Stream No.	Test ID No.	Smpl. No.	Card No.	Component Sequence Number	ID Type	Category/Species ID	Analytical Method	High Detection Limit	±	Low Detection Limit	±	Detection Limit Units	Total Milligrams Recovered	Actual Source Concentration (µg/m³) ≤	±	
1 2 3 4 5 6	7	8 9 10 11	12 13	14 15	16 17	18	19 20 21 22 23 24 25 26 27 28	29 30	31 32 33 34 35	36 37 38	39 40 41 42 43	44 45 46	47 48 49 50 51 52 53 54	55 56 57 58 59 60 61 62	63 64 65 66 67	68 69 70	71 72 73 74 75 76 77 78 79 80
F				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	
				L 0						E		E				E	

L - INORGANIC ANALYSIS/NON-LEVEL 1 ORGANIC ANALYSIS COMMENTS

Test Series No.	Stream No.	Test ID No.	Smpl. No.	Card No.	Component Sequence Number	Comments as Text
1 2 3 4 5 6	7	8 9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
F				L 1		
F				L 2		

NOTE: When encoding data, use a ∅ for alpha characters and 0 for numeric zero.

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FINE PARTICLE EMISSIONS INFORMATION SYSTEM
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M - LEVEL 1 ORGANIC ANALYSIS

Test Series No. (1-6)	Stream No. (7-8)	Test ID. No. (9-11)	Smpl. No. (12-13)	Card No. (14-15)	Component Sequence Number (16-17)	Fraction ID (18-20)	TCO (21-26)	Grav. (27-32)	ID Type (33)	Category/Species ID (34-43)	Analytical Method (44-45)	High Detection Limit (46-49)	± (50-53)	Low Detection Limit (54-57)	± (58-61)	Detection Limit Units (62-69)	Intensity (70-72)	Actual Source Concentration (μg/m³) $ (73-76)	± (77-80)
F				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E

M - LEVEL 1 ORGANIC ANALYSIS COMMENTS

Test Series No. (1-6)	Stream No. (7-8)	Test ID. No. (9-11)	Smpl. No. (12-13)	Card No. (14-15)	Component Sequence Number (16-17)	Comments as Text (18-80)
F				M 1		
F				M 2		

NOTE: When encoding data, use a Ø for alpha characters and 0 for numeric zero.

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FINE PARTICLE EMISSIONS INFORMATION SYSTEM
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R - RADIONUCLIDE DATA

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Radionuclide ID	Analytical Method	High Detection Limit ±	Low Detection Limit ±	Detection Limit Units	Actual Source Concentration (pCi/m³) ≤ ±	
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25	26 27	28 29 30 31 32 33 34 35	36 37 38 39 40 41 42 43	44 45 46 47 48 49 50 51	52 53 54 55 56 57 58 59	60–80
F					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	

R - RADIONUCLIDE DATA COMMENTS

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Comments as Text
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18–80
F					R 1		
F					R 2		

NOTE: When encoding data, use a Ø for alpha characters and 0 for numeric zero.

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FINE PARTICLE EMISSIONS INFORMATION SYSTEM
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T - BIOASSAY DATA

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Test Type*	Test Name*	Test Duration (Hr)	Lab. Sample ID.
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70	71 72 73 74 75 76	77 78 79 80
F					T 0				

Card No	Test Laboratory Name*	Lab. QA/ QC Code	Test Start Mo	Test Start Da	Test Start Yr	Test End Mo	Test End Da	Test End Yr	
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56	57 58 59	60 61	62 63	64 65	66 67	68 69	70 71	72 73 74 75 76 77 78 79 80
T 1									

Card No.	Sample Quantity	Sample Quan. Units	
14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29	30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
T 2			

Card No.	Test Organisms/Strains*
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
T 3	
T 3	
T 3	

Card No.	Type of Value*	Value ±	Value Units*	High Confidence Limit ±	Low Confidence Limit ±	Maximum Applicable Dose ±	Maximum Applicable Dose Units	Level of Toxicity*	
14 15	16 17 18 19	20 21 22 23 24 25 26	27 28 29 30 31 32 33 34	35 36 37 38 39 40 41	42 43 44 45 46 47 48	49 50 51 52 53 54 55 56	57 58 59 60 61 62 63 64 65	66 67 68 69 70 71 72 73 74 75 76 77 78 79	80
T 4		▲ E		▲ E	▲ E	▲ E			

Card No.	Bacteria Mutagenicity Response*	Minimum Effective Conc. ±	Minimum Effective Conc. Units	Approximate Concentration Factor	
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29	30 31 32 33 34 35 36	37 38 39 40 41 42 43	44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
T 5		▲ E			

T - BIOASSAY COMMENTS

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Line No.	Comments as Text*
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
F					T 9		
					T 9		
					T 9		
					T 9		
					T 9		
					T 9		
					T 9		
					T 9		

*Denotes Repetitive Data Feature at Sample Level

NOTE: When encoding data, use a Ø for alpha characters and 0 for numeric zero.

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GASEOUS EMISSIONS DATA SYSTEM

DATA INPUT FORMS

FORM 1 2/80

Form Completed by

A - SOURCE DESCRIPTION

Test Series No.		Card No.	Source Category	Source Type	Product/Device Type	SIC Code
1–6	7–13	14 15	16–35	36–55	56–75	76–79
G		A 0				

Card No.	Process Type	Design Process Rate	Process Rate Units	Feed Material Category	Source Name
14 15	16–35	36–41	42–47	48–57	58–80
A 1					

Card No.	Site Name	Street/Box Number	City	State
14 15	16–40	41–60	61–78	79 80
A 2				

Card No.	Zip Code	Country	FPEIS TSN	SDDS TSN	GEDS TSN	LEDS TSN	NPDES Number	Start Date Mo Da Yr	Finish Date Mo Da Yr
14 15	16–20	21–25	26–30	31–35	36–40	41–45	46–54	55–60	61–66
A 3									

Card No.	Sponsor Organization	Contract Number	TO/TD Number	Name of Sampling Group/Contractor
14 15	16–45	46–55	56–58	59–80
A 4				

Card No.	Reference Report Title
14 15	16–80
A 5	
A 6	

Card No.	Reference Report Author	Reference Report Number	Reference Report Publication Date
14 15	16–45	46–65	66–80
A 7			

Card No.	Reference Report NTIS Number
14 15	16–35
A 8	

B - TEST SERIES COMMENTS

Test Series No.		Card No.	Line No.	Comments as Text
1–6	7–13	14 15	16 17	18–80
G		B 0		
		B 0		
		B 0		
		B		
		B		

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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GASEOUS EMISSIONS DATA SYSTEM

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C - STREAM DESIGN CHARACTERISTICS

	Test Series No.	Stream No.		Card No.	Flowrate*	Flowrate Units*	Velocity*	Temperature*	Pressure*	Moist. Con.*	Stack Height*	Stream Name*
1	2 3 4 5 6	7 8	9 10 11 12 13	14 15	16 17 18 19 20 21	22 23 24 25 26 27	28 29 30 31	32 33 34 35	36 37 38	39 40 41	42 43 44 45 46	47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
G				C 0								

Card No.	Stream Comments as Text*
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
C 1	
C 2	

D - CONTROL DEVICE/TREATMENT PROCESS

	Test Series No.	Stream No.		Card No.	Device No.	Generic Device/Process Type	Design Type	
1	2 3 4 5 6	7 8	9 10 11 12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37	38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70	71 72 73 74 75 76 77 78 79 80
G				D 0				

Card No.	Specific Process/Device Type	Device/Process Class	Device/Process Commercial Name	
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	36 37 38 39 40 41 42 43 44 45 46 47	48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77	78 79 80
D 1				

Card No.	Manufacturer	
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45	46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
D 2		

Card No.	Seq. No.	Device/Process Keyword	Seq. No.	Device/Process Keyword	
14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	48 49	50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79	80
D 3					
D 3					
D 3					

D - CONTROL DEVICE/PROCESS DESIGN PARAMETERS

	Test Series No.	Stream No.		Card No.	Parameter No.	Design Parameter Name	Value Type	Parameter Value ±	Parameter Value Text/Units
1	2 3 4 5 6	7 8	9 10 11 12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	48	49 50 51 52 53 54 55 56	57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
G				D 4				E	
				D 4				E	
				D 4				E	
				D 4				E	
				D 4				E	
				D 4				E	
				D 4				E	

*Denotes Repetitive Data Feature at Stream Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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E - TEST IDENTIFICATION

	Test Series No.	Stream No.	Test ID. No.		Card No.	Test Date Mo	Test Date Da	Test Date Yr	Start Time	End Time	Operating Mode*	% Design Capacity*	
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19	20 21	22 23 24 25	26 27 28 29	30 – 60	61 62 63 64	65 – 80
G					E 0							▲	

E - CONTROL DEVICE/PROCESS OPERATING PARAMETERS

	Test Series No.	Stream No.	Test ID. No.		Card No.	Device/Process Number
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 – 80
G					E 1	

Card No.	Operating Parameter Number	Operating Parameter Name*	Value Type	Parameter Value $				±			Operating Parameter Text/Units
14 15	16 17	18 – 47	48	49	50	51	52	53	54	55 56	57 – 80
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			

Card No.	Device/Process Number
14 15	16 – 80
E 1	

Card No.	Operating Parameter Number	Operating Parameter Name*	Value Type	Parameter Value $				±			Operating Parameter Text/Units
14 15	16 17	18 – 47	48	49	50	51	52	53	54	55 56	57 – 80
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			
E 2						▲		E			

Card No.	Comments as Text*
14 15	16 – 80
E 7	
E 8	
E 9	

*Denotes Repetitive Data Feature at Test Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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F - FUELS AND FEEDSTOCKS

Test Series No.	Stream No.	Test ID. No.		Card No.	Source Feed Material*	Feed Material Rate & Units*	Feed Material Sample Mass*	Feed Material Mass Units*	Seq. No.
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16–45	46–62	63 64 65 66 67	68 69 70 71 72 73	74 75 76 77 78 79 80
G				F 0			▲		

	Card No.	Laboratory Name*	QA/QC Code	Feed Material Sample Volume*	Volume Units*	Seq. No.
	14 15	16–55	56 57 58	59 60 61 62 63	64 65 66 67 68 69 70	71 72 73 74 75 76 77 78 79 80
	F 1			▲		

F - FUELS AND FEEDSTOCKS -- PROXIMATE ANALYSIS

Test Series No.	Stream No.	Test ID. No.		Card No.	Proximate Analysis Parameter	Value*	Units	Proximate Analysis Parameter	Value*	Units	Seq. No.
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16–31	32–38	39 40 41 42	43–61	62–68	69 70 71 72 73	74 75 76 77 78 79 80
G				F 2	MØISTURE	▲	%WT	ASH	▲	%WT	
				F 2	VØLATILE MATTER	▲	%WT	FIXED CARBØN	▲	%WT	
				F 2	SULFUR	▲	%WT	HEAT CØNTENT		KJ/KG	
				F 2	SPECIFIC GRAVITY	▲					

F - FUELS AND FEEDSTOCKS -- ULTIMATE ANALYSIS

Test Series No.	Stream No.	Test ID. No.		Card No.	Ultimate Analysis Parameter	Value*	Ultimate Analysis Parameter	Value*	Ultimate Analysis Parameter	Value*	Ultimate Analysis Parameter	Value*	Seq. No.
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16–25	26–30	31–40	41–45	46–55	56–60	61–70	71–75	76 77 78 79 80
				F 3	CARBØN	▲	HYDRØGEN	▲	SULFUR	▲	NITRØGEN	▲	
G				F 3	ASH	▲	CHLØRINE	▲	MØISTURE	▲	ØXYGEN	▲	

F - FUELS AND FEEDSTOCKS -- CHARACTERISTICS

Test Series No.	Stream No.	Test ID. No.		Card No.	Parameter Name	Value Type*	Value* $ ±	Units*	Analytical Method*	High Detection Limit* ±	Low Detection Limit*	Detection Limit Units*	Seq. No.
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16–27	28	29–36	37–55	56	57–64	65–72	73–79	80
G				F 4			▲ E			▲ E	▲ E		
				F 4			▲ E			▲ E	▲ E		
				F 4			▲ E			▲ E	▲ E		
				F 4			▲ E			▲ E	▲ E		
				F 4			▲ E			▲ E	▲ E		
				F 4			▲ E			▲ E	▲ E		
				F 4			▲ E			▲ E	▲ E		
				F 4			▲ E			▲ E	▲ E		
				F 4			▲ E			▲ E	▲ E		
				F 4			▲ E			▲ E	▲ E		
				F 4			▲ E			▲ E	▲ E		
				F 4			▲ E			▲ E	▲ E		

*Denotes Repetitive Data Feature at Test Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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F - FUELS AND FEEDSTOCKS - CHEMICAL ANALYSIS

1	Test Series No. 2–6	Stream No. 7–8	Test ID. No. 9–11	12–13	Card No. 14–15	Chemical ID Type 16	Category/Species ID 17–26	Analytical Method 27–28	High Detection Limit ± 29–36	Low Detection Limit ± 37–44	Detection Limit Units 45–52	Total Milligrams Recovered 53–60	≤ 61	Actual Concentration ± 62–68	Actual Concentration Units 69–78	Seq. No. 79–80
G					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		
					F 5				▲ E	▲ E		▲		▲ E		

F - FUELS AND FEEDSTOCKS - COMMENTS

1	Test Series No. 2–6	Stream No. 7–8	Test ID. No. 9–11	12–13	Card No. 14–15	Comments as Text * 16–78	Seq. No. 79–80
G					F 7		
G					F 8		
G					F 9		

*Denotes Repetitive Data Feature at **Test Level**

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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H - SAMPLING ACTIVITY DESCRIPTION

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.		Measurement Instrument / Method Name*	Sampling Start Time	Sampling Duration* (Min)	Meas. Stream Velocity*	Meas. Stream Temp.*	Meas. Stream Pressure*	Meas. Stream Moist. Con.*	Stream Density*	Density Determination*	Sample Volume
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46	47 48 49 50	51 52 53	54 55 56 57	58 59 60 61	62 63 64	65 66 67	68 69 70	71	72 73 74 75 76
G				H 0											

77 78 79 80

Card No.	Meas. Stream Flowrate*	Flowrate Units*	Flowrate Measurement Method*	Sample Total Mass*	Mass Units*	
14 15	16 17 18 19 20 21	22 23 24 25 26 27	28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	48 49 50 51 52	53 54	55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 1						

Card No.	Sampling Location Code	Device/Process Number	Sampling Location Description*	
14 15	16	17 18	19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48	49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 2				

Card No.	% Iso-kinetic*	CO_2*	CO*	O_2*	N_2*	Dilution Factor*	Particle Diameter Basis*	Particle Concentration Basis*	Upper Diameter Boundary*	Calibration/Calculation*	
14 15	16 17 18	19 20 21 22	23 24 25 26	27 28 29 30	31 32 33 34	35 36 37 38 39	40	41	42 43 44 45 46	47	48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 3											

Card No.	Trace Gases In PPM*
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 4	

Card No.	Collection Surface / Substrate*	
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70	71 72 73 74 75 76 77 78 79 80
H 5		

Card No.	Comments as Text*
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 6	
H 7	
H 8	
H 9	

*Denotes Repetitive Data Feature at Sample Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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K - COMPONENT

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Component Name	Stage/Filter Cut Size	Component Weight $ ±	Chemical Analysis Laboratory Name*
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29	30 31 32 33	34 35 36 37 38 39 40 41	42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
G				K 0			▲	▲ E	

Card No.	Component Sequence Number	Chem. QA/QC Code	Rad. QA/QC Code	Radiological Analysis Laboratory Name*	Component (Aliquot) Mass/Volume	Mass/Volume Units	
14 15	16 17	18 19 20	21 22 23	24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63	64 65 66 67 68 69	70 71 72 73 74 75	76 77 78 79 80
K 1					▲		

K - EFFLUENT CHARACTERISTICS

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Effluent Parameter Name	Value Type*	Value*	Value Units*	Analytical Method*	High Detection Limit* ±	Low Detection Limit* ±	Detection Limit Units*	
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35	36 37 38 39 40 41 42 43	44	45 46 47 48 49 50 51 52 53	54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69	70 71 72 73 74 75 76 77 78 79 80
G				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		

K - EFFLUENT CHARACTERISTICS COMMENTS

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Comments as Text
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
G				K 3		
G				K 4		

*Denotes Repetitive Data Feature at Component Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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L - INORGANIC ANALYSIS/NON-LEVEL 1 ORGANIC ANALYSIS

Test Series No.	Stream No.	Test ID No.	Smpl. No.	Card No.	Component Sequence Number	ID Type	Category/Species ID	Analytical Method	High Detection Limit	±	Low Detection Limit	±	Detection Limit Units	Total Milligrams Recovered	Actual Source Concentration (μg/m³) ≤	±	
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18	19 20 21 22 23 24 25 26 27 28	29 30	31 32 33 34 35	36 37 38	39 40 41 42 43	44 45 46	47 48 49 50 51 52 53 54	55 56 57 58 59 60 61 62	63 64 65 66 67	68 69 70	71 72 73 74 75 76 77 78 79 80
G				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		
				L 0					▲ E		▲ E			▲	▲ E		

L - INORGANIC ANALYSIS/NON-LEVEL 1 ORGANIC ANALYSIS COMMENTS

Test Series No.	Stream No.	Test ID No.	Smpl. No.	Card No.	Component Sequence Number	Comments as Text
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
G				L 1		
G				L 2		

NOTE: When encoding data, use a ∅ for alpha character and 0 for numeric zero.

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M - LEVEL 1 ORGANIC ANALYSIS

Test Series No. (1–6)	Stream No. (7–8)	Test ID. No. (9–11)	Smpl. No. (12–13)	Card No. (14–15)	Component Sequence Number (16–17)	Fraction ID (18–20)	TCO (21–26)	Grav. (27–32)	ID Type (33)	Category/Species ID (34–43)	Analytical Method (44–45)	High Detection Limit (46–49)	± (50–53)	Low Detection Limit (54–57)	± (58–61)	Detection Limit Units (62–69)	Intensity (70–72)	Actual Source Concentration (μg/m³) ≤ (73–76)	± (77–80)
G				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E
				M 0			▲	▲	M			▲	E	▲	E			▲	E

M - LEVEL 1 ORGANIC ANALYSIS COMMENTS

Test Series No. (1–6)	Stream No. (7–8)	Test ID. No. (9–11)	Smpl. No. (12–13)	Card No. (14–15)	Component Sequence Number (16–17)	Comments as Text (18–80)
G				M 1		
G				M 2		

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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EPA EADS GEDS

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GASEOUS EMISSIONS DATA SYSTEM

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FORM 10 2/80

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R - RADIONUCLIDE DATA

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Radionuclide ID	Analytical Method	High Detection Limit ±	Low Detection Limit ±	Detection Limit Units	Actual Source Concentration (pCi/m³) ≤ ±	
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25	26 27	28 29 30 31 32 33 34 35	36 37 38 39 40 41 42 43	44 45 46 47 48 49 50 51	52 53 54 55 56 57 58 59	60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
G				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	

R - RADIONUCLIDE ANALYSIS COMMENTS

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Comments as Text
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
G				R 1		
G				R 2		

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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FORM 11 2/80

Form Completed by

T - BIOASSAY DATA

	Test Series No	Stream No.	Test ID. No	Smpl. No.	Card No	Test Type*	Test Name*	Test Duration (Hr)	Lab. Sample ID.
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16–40	41–70	71–76	77–80
G					T 0				

Card No	Test Laboratory Name*	Lab. QA/QC Code	Test Start Mo	Test Start Da	Test Start Yr	Test End Mo	Test End Da	Test End Yr	
14 15	16–56	57 58 59	60 61	62 63	64 65	66 67	68 69	70 71	72–80
T 1									

Card No.	Sample Quantity	Sample Quan. Units	
14 15	16–23	24–29	30–80
T 2			

Card No	Test Organisms / Strains*
14 15	16–80
T 3	
T 3	
T 3	

Card No.	Type of Value*	Value ±	Value Units*	High Confidence Limit ±	Low Confidence Limit ±	Maximum Applicable Dose ±	Maximum Applicable Dose Units	Level of Toxicity*	
14 15	16–19	20–26	27–34	35–41	42–48	49–56	57–65	66–79	80
T 4		▲ E		▲ E	▲ E	▲ E			

Card No.	Bacteria Mutagenicity Response*	Minimum Effective Conc. ±	Minimum Effective Conc. Units	Approximate Concentration Factor	
14 15	16–29	30–36	37–43	44–59	60–80
T 5		▲ E			

T - BIOASSAY COMMENTS

	Test Series No	Stream No.	Test ID. No	Smpl. No.	Card No.	Line No.	Comments as Text*
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18–80
G					T 9		
					T 9		
					T 9		
					T 9		
					T 9		
					T 9		
					T 9		
					T 9		

*Denotes Repetitive Data Feature at Sample Level

NOTE: When encoding data, use a ∅ for alpha character and 0 for numeric zero.

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FORM 1 2/80

Form Completed by

A - SOURCE DESCRIPTION

	Test Series No.		Card No.	Source Category	Source Type	Product/Device Type	SIC Code	
1	2–6	7–13	14 15	16–35	36–55	56–75	76–79	80
L			A 0					

Card No.	Process Type	Design Process Rate	Process Rate Units	Feed Material Category	Source Name
14 15	16–35	36–41	42–47	48–57	58–80
A 1					

Card No.	Site Name	Street/Box Number	City	State
14 15	16–40	41–60	61–78	79 80
A 2				

Card No.	Zip Code	Country	FPEIS TSN	SDDS TSN	GEDS TSN	LEDS TSN	NPDES Number	Start Date Mo	Start Date Da	Start Date Yr	Finish Date Mo	Finish Date Da	Finish Date Yr	
14 15	16–20	21–25	26–30	31–35	36–40	41–45	46–54	55 56	57 58	59 60	61 62	63 64	65 66	67–80
A 3														

Card No.	Sponsor Organization	Contract Number	TO/TD Number	Name of Sampling Group/Contractor
14 15	16–45	46–55	56–58	59–80
A 4				

Card No.	Reference Report Title
14 15	16–80
A 5	
A 6	

Card No.	Reference Report Author	Reference Report Number	Reference Report Publication Date
14 15	16–45	46–65	66–80
A 7			

Card No.	Reference Report NTIS Number	
14 15	16–35	36–80
A 8		

B - TEST SERIES COMMENTS

	Test Series No.		Card No.	Line No.	Comments as Text
1	2–6	7–13	14 15	16 17	18–80
L			B 0		
			B 0		
			B 0		
			B 0		
			B 0		

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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Form Completed by ____________

B - WASTEWATER COLLECTION SYSTEM EFFLUENT IDENTIFICATION

	Test Series No.		Card No.	Site Latitude	Site Longitude	Fraction Design Rate of Industrial Origin	
1	2 3 4 5 6	7 8 9 10 11 12 13	14 15	16 17 18 19	20 21 22 23 24	25 26 27 28 29	30–80
L			B 1	▲ (18)	▲ (23)	▲ (26)	

Card No.	Contributing Industrial Category No.	Ind./Com. SIC No.	Category Flow Contribution	Number of Estab.	
14 15	16 17 18 19 20	21 22 23 24	25 26 27	28 29 30 31 32	33–80
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		
B 2			▲		

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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FORM 2 2/80

Form Completed by

C - STREAM DESIGN CHARACTERISTICS

Test Series No.	Stream No. •		Card No.	Flowrate*	Flowrate Units*	Velocity*	Temperature*	Pressure*	Moist. Con.*	Stack Height*	Stream Name*
1 2 3 4 5 6	7 8	9 10 11 12 13	14 15	16 17 18 19 20 21	22 23 24 25 26 27	28 29 30 31	32 33 34 35	36 37 38	39 40 41	42 43 44 45 46	47 48 … 80
L			C 0	▲		▲		▲	▲	▲	

Card No.	Stream Comments as Text*
14 15	16 17 … 80
C 1	
C 2	

D - CONTROL DEVICE/TREATMENT/STORAGE/RECOVERY PROCESS

Test Series No.	Stream No. •		Card No.	Device No.	Generic Device/Process Type	Design Type	
1 2 3 4 5 6	7 8	9 10 11 12 13	14 15	16 17	18 19 … 37	38 39 … 70	71 72 … 80
L			D 0				

Card No.	Specific Process/Device Type	Device/Process Class	Device/Process Commercial Name	
14 15	16 17 … 35	36 37 … 47	48 49 … 77	78 79 80
D 1				

Card No.	Manufacturer	
14 15	16 17 … 45	46 47 … 80
D 2		

Card No.	Seq. No.	Device/Process Keyword	Seq. No.	Device/Process Keyword	
14 15	16 17	18 19 … 47	48 49	50 51 … 79	80
D 3					
D 3					
D 3					

D - CONTROL DEVICE/PROCESS DESIGN PARAMETERS

Test Series No.	Stream No. •		Card No.	Parameter No. •	Design Parameter Name	Value Type	Parameter Value ±	Parameter Value Text/Units
1 2 3 4 5 6	7 8	9 10 11 12 13	14 15	16 17	18 19 … 47	48	49 50 51 52 53 54 55 56	57 58 … 80
L			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	

*Denotes Repetitive Data Feature at Stream Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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FORM 3 2/80

Form Completed by

E - TEST IDENTIFICATION

	Test Series No.	Stream No.	Test ID. No.		Card No.	Test Date Mo	Test Date Da	Test Date Yr	Start Time	End Time	Operating Mode*	Design Capacity*	
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19	20 21	22 23 24 25	26 27 28 29	30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	61 62 63 64	65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
L					E 0								

E - CONTROL DEVICE/PROCESS OPERATING PARAMETERS

	Test Series No.	Stream No.	Test ID. No.		Card No.	Device/Process Number
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
L					E 1	

Card No.	Operating Parameter Number	Operating Parameter Name*	Value Type	Parameter Value $	Parameter Value ±		Operating Parameter Text/Units
14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	48	49 50 51 52	53 54	55 56	57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		

Card No.	Device/Process Number
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
E 1	

Card No.	Operating Parameter Number	Operating Parameter Name*	Value Type	Parameter Value $	Parameter Value ±		Operating Parameter Text/Units
14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	48	49 50 51 52	53 54	55 56	57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		
E 2				▲	E		

Card No.	Comments as Text*
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
E 7	
E 8	
E 9	

*Denotes Repetitive Data Feature at Test Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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LIQUID EFFLUENT DATA SYSTEM

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FORM 4 2/80

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F - FUELS AND FEEDSTOCKS

	Test Series No.	Stream No.	Test ID. No.		Card No.	Source Feed Material*	Feed Material Rate & Units*	Feed Material Sample Mass*	Feed Material Mass Units*	Seq. No.
1	2–6	7–8	9–11	12–13	14–15	16–45	46–62	63–67	68–73	74–80
L					F 0					

	Card No.	Laboratory Name*	QA/QC Code	Feed Material Sample Volume*	Volume Units*		Seq. No.
	14–15	16–55	56–58	59–63	64–70	71–73	74–80
	F 1						

F - FUELS AND FEEDSTOCKS -- PROXIMATE ANALYSIS

	Test Series No.	Stream No.	Test ID. No.		Card No.	Proximate Analysis Parameter	Value*	Units	Proximate Analysis Parameter	Value*	Units	Seq. No.
1	2–6	7–8	9–11	12–13	14–15	16–31	32–38	39–42	43–61	62–68	69–73	74–80
L					F 2	MØISTURE		%WT	ASH		%WT	
					F 2	VØLATILE MATTER		%WT	FIXED CARBØN		%WT	
					F 2	SULFUR		%WT	HEAT CØNTENT		KJ/KG	
					F 2	SPECIFIC GRAVITY						

F - FUELS AND FEEDSTOCKS -- ULTIMATE ANALYSIS

	Test Series No.	Stream No.	Test ID. No.		Card No.	Ultimate Analysis Parameter	Value*	Ultimate Analysis Parameter	Value*	Ultimate Analysis Parameter	Value*	Ultimate Analysis Parameter	Value*	Seq. No.
1	2–6	7–8	9–11	12–13	14–15	16–25	26–30	31–40	41–45	46–55	56–60	61–70	71–75	76–80
L					F 3	CARBØN		HYDRØGEN		SULFUR		NITRØGEN		
L					F 3	ASH		CHLØRINE		MØISTURE		ØXYGEN		

F - FUELS AND FEEDSTOCKS -- CHARACTERISTICS

	Test Series No.	Stream No.	Test ID. No.		Card No.	Parameter Name	Value Type*	Value*	±	Units*	Analytical Method*	High Detection Limit*	±	Low Detection Limit*	±	Detection Limit Units*	Seq. No.
1	2–6	7–8	9–11	12–13	14–15	16–27	28	29–33	34–36	37–54	55–56	57–61	62–64	65–69	70–72	73–79	80
L					F 4			E				E		E			
					F 4			E				E		E			
					F 4			E				E		E			
					F 4			E				E		E			
					F 4			E				E		E			
					F 4			E				E		E			
					F 4			E				E		E			
					F 4			E				E		E			
					F 4			E				E		E			
					F 4			E				E		E			
					F 4			E				E		E			
					F 4			E				E		E			

*Denotes Repetitive Data Feature at Test Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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LIQUID EFFLUENT DATA SYSTEM

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FORM 5 2/80

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F - FUELS AND FEEDSTOCKS - CHEMICAL ANALYSIS

Test Series No.	Stream No.	Test ID. No.		Card No.	Chemical ID Type	Category/Species ID	Analytical Method	High Detection Limit ±	Low Detection Limit ±	Detection Limit Units	Total Milligrams Recovered	Actual Concentration ±	Actual Concentration Units	Seq. No.
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16	17 18 19 20 21 22 23 24 25 26	27 28	29 30 31 32 33 34 35 36	37 38 39 40 41 42 43 44	45 46 47 48 49 50 51 52	53 54 55 56 57 58 59 60	61 62 63 64 65 66 67 68	69 70 71 72 73 74 75 76 77 78 79	80
L				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		
				F 5				▲ E	▲ E		▲	▲ E		

F - FUELS AND FEEDSTOCKS - COMMENTS

Test Series No.	Stream No.	Test ID. No.		Card No.	Comments as Text *	Seq. No.
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79	80
L				F 7		
L				F 8		
L				F 9		

*Denotes Repetitive Data Feature at **Test Level**

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NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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LIQUID EFFLUENT DATA SYSTEM

DATA INPUT FORMS

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H - SAMPLING ACTIVITY DESCRIPTION

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.		Measurement Instrument / Method Name*	Sampling Start Time	Sampling Duration* (Min)	Meas. Stream Velocity*	Meas. Stream Temp.*	Meas. Stream Pressure*	Meas. Stream Moist. Con.*	Meas. Stream Density*	Density Determination*	Sample Volume	
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46	47 48 49 50	51 52 53	54 55 56 57	58 59 60 61	62 63 64	65 66 67	68 69 70	71	72 73 74 75 76	77 78 79 80
L				H 0												

Card No.	Meas. Stream Flowrate*	Flowrate Units*	Flowrate Measurement Method*	Sample Total Mass*	Mass Units*	
14 15	16 17 18 19 20 21	22 23 24 25 26 27	28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	48 49 50 51 52	53 54	55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 1						

Card No.	Sampling Location Code	Device/Process Number	Sampling Location Description*	
14 15	16	17 18	19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48	49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 2				

Card No.	% Isokinetic*	CO$_2$*	CO*	O$_2$*	N$_2$*	Dilution Factor*	Particle Diameter Basis*	Particle Concentration Basis*	Upper Diameter Boundary*	Calibration/Calculation*	
14 15	16 17 18	19 20 21 22	23 24 25 26	27 28 29 30	31 32 33 34	35 36 37 38 39	40	41	42 43 44 45 46	47	48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 3											

Card No.	Trace Gases in PPM*
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 4	

Card No.	Collection Surface/Substrate*	
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70	71 72 73 74 75 76 77 78 79 80
H 5		

Card No.	Comments as Text*
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
H 6	
H 7	
H 8	
H 9	

*Denotes Repetitive Data Feature at Sample Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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K - COMPONENT

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Component Name	Stage/ Filter Cut Size	Component Weight $ ±	Chemical Analysis Laboratory Name*
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29	30 31 32 33	34 35 36 37 38 39 40 41	42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
L					K 0			▲	▲ E	

	Card No.	Component Sequence Number	Chem. QA/QC Code	Rad. QA/QC Code	Radiological Analysis Laboratory Name*	Component (Aliquot) Mass/Volume	Mass/Volume Units	
↓	14 15	16 17	18 19 20	21 22 23	24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63	64 65 66 67 68 69 70	71 72 73 74 75	76 77 78 79 80
	K 1					▲		

K - EFFLUENT CHARACTERISTICS

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Effluent Parameter Name	Value Type*	Value*	Value Units*	Analytical Method*	High Detection Limit* ±	Low Detection Limit* ±	Detection Limit Units*	
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35	36 37 38 39 40 41 42 43	44 45	46 47 48 49 50 51 52 53	54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69	70 71 72 73 74 75 76 77 78 79 80
L					K 2				▲			▲ E	▲ E		
↓					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
					K 2				▲			▲ E	▲ E		
↓					K 2				▲			▲ E	▲ E		

K - EFFLUENT CHARACTERISTICS COMMENTS

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Comments as Text
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
L					K 3		
L					K 4		

*Denotes Repetitive Data Feature at Component Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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L - INORGANIC ANALYSIS/NON-LEVEL 1 ORGANIC ANALYSIS

	Test Series No.	Stream No.	Test ID No.	Smpl. No.	Card No.	Component Sequence Number	ID Type	Category/Species ID	Analytical Method	High Detection Limit	±	Low Detection Limit	±	Detection Limit Units	Total Milligrams Recovered	Actual Source Concentration (μg/l) ≤	±	
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18	19 20 21 22 23 24 25 26 27 28	29 30	31 32 33 34 35	36 37 38	39 40 41 42 43	44 45 46	47 48 49 50 51 52 53 54	55 56 57 58 59 60 61 62	63 64 65 66 67	68 69 70	71 72 73 74 75 76 77 78 79 80
L					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		
					L 0					▲ E		▲ E			▲	▲ E		

L - INORGANIC ANALYSIS/NON-LEVEL 1 ORGANIC ANALYSIS COMMENTS

	Test Series No.	Stream No.	Test ID No.	Smpl. No.	Card No.	Component Sequence Number	Comments as Text
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
L					L 1		
L					L 2		

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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M - LEVEL 1 ORGANIC ANALYSIS

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Fraction ID	TCO	Grav	ID Type	Category/Species ID	Analytical Method	High Detection Limit	±	Low Detection Limit	±	Detection Limit Units	Intensity	Actual Source Concentration (μg/l)	±
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20	21 22 23 24 25 26	27 28 29 30 31 32	33	34 35 36 37 38 39 40 41 42 43	44 45	46 47 48 49	50 51 52 53	54 55 56 57	58 59 60 61	62 63 64 65 66 67 68 69	70 71 72	73 74 75 76	77 78 79 80
L					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E
					M 0			▲	▲	M			▲	E	▲	E			▲	E

M - LEVEL 1 ORGANIC ANALYSIS COMMENTS

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Comments as Text
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
L					M 1		
L					M 2		

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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R - RADIONUCLIDE DATA

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Radionuclide ID	Analytical Method	High Detection Limit ±	Low Detection Limit ±	Detection Limit Units	Actual Source Concentration (pCi/l) ≤ ±	
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25	26 27	28 29 30 31 32 33 34 35	36 37 38 39 40 41 42 43	44 45 46 47 48 49 50 51	52 53 54 55 56 57 58 59	60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
L					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	
					R 0				▲ E	▲ E		▲ E	

R - RADIONUCLIDE DATA COMMENTS

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Comments as Text
1	2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
L					R 1		
L					R 2		

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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T - BIOASSAY DATA

	Test Series No	Stream No.	Test ID. No	Smpl. No.	Card No.	Test Type*	Test Name*	Test Duration (Hr)	Lab. Sample ID.
1	2–6	7–8	9–11	12–13	14–15	16–40	41–70	71–76	77–80
L					T 0				

Card No	Test Laboratory Name*	Lab. QA/QC Code	Test Start Mo	Da	Yr	Test End Mo	Da	Yr	
14–15	16–56	57–59	60–61	62–63	64–65	66–67	68–69	70–71	72–80
T 1									

Card No.	Sample Quantity	Sample Quan. Units	
14–15	16–23	24–29	30–80
T 2			

Card No	Test Organisms / Strains*
14–15	16–80
T 3	
T 3	
T 3	

Card No.	Type of Value*	Value ±	Value Units*	High Confidence Limit ±	Low Confidence Limit ±	Maximum Applicable Dose ±	Maximum Applicable Dose Units	Level of Toxicity*	
14–15	16–19	20–26	27–34	35–41	42–48	49–56	57–65	66–79	80
T 4		▲ E		▲ E	▲ E	▲ E			

Card No.	Bacterial Mutagenicity Response*	Minimum Effective Conc. ±	Minimum Effective Conc. Units	Approximate Concentration Factor	
14–15	16–29	30–36	37–43	44–60	61–80
T 5		▲ E			

T - BIOASSAY COMMENTS

	Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Line No.	Comments as Text*
1	2–6	7–8	9–11	12–13	14–15	16–17	18–80
L					T 9		
					T 9		
					T 9		
					T 9		
					T 9		
					T 9		
					T 9		
					T 9		

*Denotes Repetitive Data Feature at **Sample Level**

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NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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SOLID DISCHARGE DATA SYSTEM

DATA INPUT FORMS

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A - SOURCE DESCRIPTION

Test Series No.		Card No.	Source Category	Source Type	Product/Device Type	SIC Code	
1 2 3 4 5 6	7 8 9 10 11 12 13	14 15	16–35	36–55	56–75	76 77 78 79	80
S		A					

Card No.	Process Type	Design Process Rate	Process Rate Units	Feed Material Category	Source Name
14 15	16–35	36–41	42–47	48–57	58–80
A 1					

Card No.	Site Name	Street/Box Number	City	State
14 15	16–40	41–60	61–78	79 80
A 2				

Card No.	Zip Code	Country	FPEIS TSN	SDDS TSN	GEDS TSN	LEDS TSN	NPDES Number	Start Date Mo	Start Date Da	Start Date Yr	Finish Date Mo	Finish Date Da	Finish Date Yr	
14 15	16–20	21–25	26–30	31–35	36–40	41–45	46–54	55 56	57 58	59 60	61 62	63 64	65 66	67–80
A 3														

Card No.	Sponsor Organization	Contract Number	TO/TD Number	Name of Sampling Group/Contractor
14 15	16–45	46–55	56–58	59–80
A 4				

Card No.	Reference Report Title
14 15	16–80
A 5	
A 6	

Card No.	Reference Report Author	Reference Report Number	Reference Report Publication Date
14 15	16–45	46–65	66–80
A 7			

Card No.	Reference Report NTIS Number	
14 15	16–35	36–80
A 8		

B - TEST SERIES COMMENTS

Test Series No.		Card No.	Line No.	Comments as Text
1 2 3 4 5 6	7 8 9 10 11 12 13	14	15 16 17	18–80
S		B	0	
		B	0	
		B	0	
		B	0	
		B	0	

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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SOLID DISCHARGE DATA SYSTEM

DATA INPUT FORMS

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C - STREAM DESIGN CHARACTERISTICS

Test Series No.	Stream No.		Card No.	Flowrate*	Flowrate Units*	Velocity*	Temperature*	Pressure*	Moist. Con.*	Stack Height*	Stream Name*
1 2 3 4 5 6	7 8	9 10 11 12 13	14 15	16 17 18 19 20 21	22 23 24 25 26 27	28 29 30 31	32 33 34 35	36 37 38	39 40 41	42 43 44 45 46	47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
S			C 0	▲		▲		▲	▲	▲	

Card No.	Stream Comments as Text*
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
C 1	
C 2	

D - CONTROL DEVICE/TREATMENT/STORAGE/RECOVERY PROCESS

Test Series No.	Stream No		Card No.	Device No.	Generic Device/Process Type	Design Type	
1 2 3 4 5 6	7 8	9 10 11 12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37	38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70	71 72 73 74 75 76 77 78 79 80
S			D 0				

Card No.	Specific Process/Device Type	Device/Process Class	Device/Process Commercial Name	
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	36 37 38 39 40 41 42 43 44 45 46 47	48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77	78 79 80
D 1				

Card No.	Manufacturer	
14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45	46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
D 2		

Card No.	Seq. No.	Device/Process Keyword	Seq. No.	Device/Process Keyword	
14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	48 49	50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79	80
D 3					
D 3					
D 3					

D - CONTROL DEVICE/PROCESS DESIGN PARAMETERS

Test Series No.	Stream No.		Card No.	Parameter No.	Design Parameter Name	Value Type	Parameter Value ±	Operating Parameter Text/Units
1 2 3 4 5 6	7 8	9 10 11 12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	48	49 50 51 52 53 54 55 56	57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
S			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	
			D 4				▲ E	

*Denotes Repetitive Data Feature at Stream Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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E - TEST IDENTIFICATION

Test Series No.	Stream No.	Test ID. No.		Card No.	Test Date Mo	Da	Yr	Start Time	End Time	Operating Mode*	% Design Capacity*	
1–6	7–8	9–11	12–13	14–15	16–17	18–19	20–21	22–25	26–29	30–60	61–64	65–80
S				E 0							▲	

E - CONTROL DEVICE/PROCESS OPERATING PARAMETERS

Test Series No.	Stream No.	Test ID. No.		Card No.	Device/Process Number
1–6	7–8	9–11	12–13	14–15	16–80
S				E 1	

Card No.	Operating Parameter Number	Operating Parameter Name*	Value Type	Parameter Value $ ±	Operating Parameter Text/Units
14–15	16–17	18–47	48	49–56	57–80
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	

Card No.	Device/Process Number
14–15	16–80
E 1	

Card No.	Operating Parameter Number	Operating Parameter Name*	Value Type	Parameter Value $ ±	Operating Parameter Text/Units
14–15	16–17	18–47	48	49–56	57–80
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	
E 2				▲ E	

Card No.	Comments as Text*
14–15	16–80
E 7	
E 8	
E 9	

*Denotes Repetitive Data Feature at Test Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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F - FUELS AND FEEDSTOCKS

Test Series No.	Stream No	Test ID. No.	Card No.	Source Feed Material*	Feed Material Rate & Units*	Feed Material Sample Mass*	Feed Material Mass Units*	Seq. No.
S			F 0					

Card No.	Laboratory Name*	QA/QC Code	Feed Material Sample Volume*	Volume Units*	Seq. No.
F 1					

F - FUELS AND FEEDSTOCKS -- PROXIMATE ANALYSIS

Test Series No.	Stream No	Test ID. No.	Card No.	Proximate Analysis Parameter	Value*	Units	Proximate Analysis Parameter	Value*	Units	Seq. No.
S			F 2	MØISTURE		%WT	ASH		%WT	
			F 2	VØLATILE MATTER		%WT	FIXED CARBØN		%WT	
			F 2	SULFUR		%WT	HEAT CØNTENT		KJ/KG	
			F 2	SPECIFIC GRAVITY						

F - FUELS AND FEEDSTOCKS -- ULTIMATE ANALYSIS

Test Series No.	Stream No	Test ID. No.	Card No.	Ultimate Analysis Parameter	Value*	Ultimate Analysis Parameter	Value*	Ultimate Analysis Parameter	Value*	Ultimate Analysis Parameter	Value*	Seq. No.
S			F 3	CARBØN		HYDRØGEN		SULFUR		NITRØGEN		
			F 3	ASH		CHLØRINE		MØISTURE		ØXYGEN		

F - FUELS AND FEEDSTOCKS -- CHARACTERISTICS

Test Series No.	Stream No	Test ID. No.	Card No.	Parameter Name	Value Type*	Value*	±	Units*	Analytical Method*	High Detection Limit*	±	Low Detection Limit*	±	Detection Limit Units*	Seq. No.
S			F 4			E				E		E			
			F 4			E				E		E			
			F 4			E				E		E			
			F 4			E				E		E			
			F 4			E				E		E			
			F 4			E				E		E			
			F 4			E				E		E			
			F 4			E				E		E			
			F 4			E				E		E			
			F 4			E				E		E			
			F 4			E				E		E			
			F 4			E				E		E			

*Denotes Repetitive Data Feature at Test Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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F - FUELS AND FEEDSTOCKS - CHEMICAL ANALYSIS

	Test Series No.	Stream No.	Test ID. No.		Card No.		Chemical ID Type	Category/Species ID	Analytical Method	High Detection Limit	±	Low Detection Limit	±	Detection Limit Units	Total Milligrams Recovered	≤	Actual Concentration	±	Actual Concentration Units	Seq. No.
1	2 3 4 5 6	7 8	9 10 11	12 13	14	15	16	17 18 19 20 21 22 23 24 25 26	27	28 29 30 31 32 33	34 35 36	37 38 39 40 41	42 43 44	45 46 47 48 49 50 51 52	53 54 55 56 57 58 59 60	61	62 63 64 65	66 67 68	69 70 71 72 73 74 75 76 77 78	79 80
S					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			
					F	5				▲ E		▲ E			▲		▲ E			

F - FUELS AND FEEDSTOCKS - COMMENTS

	Test Series No.	Stream No.	Test ID. No.		Card No.		Comments as Text *	Seq. No.
1	2 3 4 5 6	7 8	9 10 11	12 13	14	15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78	79 80
S					F	7		
S					F	8		
S					F	9		

*Denotes Repetitive Data Feature at Test Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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H - SAMPLING ACTIVITY DESCRIPTION

Test Series No.	Stream No	Test ID. No.	Smpl. No.	Card No.	Measurement Instrument / Method Name*	Sampling Start Time	Sampling Duration* (Min)	Meas. Stream Velocity*	Meas. Stream Temp*	Meas. Stream Pressure*	Meas. Stream Moist. Con.*	Meas. Stream Density*	Density Determination*	Sample Volume
S				H 0										

Card No.	Meas. Stream Flowrate*	Flowrate Units*	Flowrate Measurement Method*	Sample Total Mass*	Mass Units*
H 1					

Card No.	Sampling Location Code	Device/Process Number	Sampling Location Description*
H 2			

Card No.	% Iso-kinetic*	CO_2*	CO*	O_2*	N_2*	Dilution Factor*	Particle Diameter Basis*	Particle Concentration Basis*	Upper Diameter Boundary*	Calibration/Calculation*
H 3										

Card No.	Trace Gases in PPM*
H 4	

Card No.	Collection Surface/Substrate*
H 5	

Card No.	Comments as Text*
H 6	
H 7	
H 8	
H 9	

*Denotes Repetitive Data Feature at Sample Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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K - COMPONENT

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Component Name	Stage/ Filter Cut Size	Mass (mg) $ ±	Chemical Analysis Laboratory Name*
1 2 3 4 5 6	7	8 9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29	30 31 32 33	34 35 36 37 38 39 40 41	42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
S				K 0			▲	▲ E	

	Card No.	Component Sequence Number	Chem. QA/QC Code	Rad. QA/QC Code	Radiological Analysis Laboratory Name*	Component (Aliquot) Mass/Volume	Mass/Volume Units	
	14 15	16 17	18 19 20	21 22 23	24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63	64 65 66 67 68 69 70	71 72 73 74 75	76 77 78 79 80
	K 1					▲		

K - EFFLUENT CHARACTERISTICS

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Effluent Parameter Name	Value Type*	Value*	Value Units*	Analytical Method*	High Detection Limit* ±	Low Detection Limit* ±	Detection Limit Units*	
1 2 3 4 5 6	7	8 9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29	30	31 32 33 34 35	36 37 38 39 40 41 42 43	44	45 46 47 48 49 50 51 52 53	54 55 56 57 58 59 60	61 62 63 64 65 66 67 68 69	70 71 72 73 74 75 76 77 78 79 80
S				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		
				K 2				▲			▲ E	▲ E		

K - EFFLUENT CHARACTERISTICS COMMENTS

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Comments as Text
1 2 3 4 5 6	7	8 9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
S				K 3		
S				K 4		

*Denotes Repetitive Data Feature at Component Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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L - INORGANIC ANALYSIS/NON-LEVEL 1 ORGANIC ANALYSIS

Test Series No.	Stream No.	Test ID No.	Smpl. No.	Card No.	Component Sequence Number	ID Type	Category/Species ID	Analytical Method	High Detection Limit ±	Low Detection Limit ±	Detection Limit Units	Total Milligrams Recovered	Actual Source Concentration (µg/g) ≤ ±	
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18	19 20 21 22 23 24 25 26 27 28	29 30	31 32 33 34 35 36 37 38	39 40 41 42 43 44 45 46	47 48 49 50 51 52 53 54	55 56 57 58 59 60 61 62	63 64 65 66 67 68 69 70	71 72 73 74 75 76 77 78 79 80
S				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	
				L 0					▲ E	▲ E		▲	▲ E	

L - INORGANIC ANALYSIS/NON-LEVEL 1 ORGANIC ANALYSIS COMMENTS

Test Series No.	Stream No.	Test ID No.	Smpl. No.	Card No.	Component Sequence Number	Comments as Text
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
S				L 1		
S				L 2		

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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M - LEVEL 1 ORGANIC ANALYSIS

1	Test Series No. 2-6	Stream No. 7-8	Test ID. No. 9-11	Smpl. No. 12-13	Card No. 14-15	Component Sequence Number 16-17	Fraction ID 18-20	TCO 21-26	Grav. 27-32	ID Type 33	Category/Species ID 34-43	Analytical Method 44-45	High Detection Limit ± 46-53	Low Detection Limit ± 54-61	Detection Limit Units 62-69	Intensity 70-72	Actual Source Concentration (µg/g) ≤ ± 73-80
S					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E
					M 0			▲	▲	M			▲ E	▲ E			▲ E

M - LEVEL 1 ORGANIC ANALYSIS COMMENTS

1	Test Series No. 2-6	Stream No. 7-8	Test ID. No. 9-11	Smpl. No. 12-13	Card No. 14-15	Component Sequence Number 16-17	Comments as Text 18-80
S					M 1		
S					M 2		

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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R - RADIONUCLIDE DATA

Test Series No.	Stream No.	Test ID. No	Smpl. No	Card No.	Component Sequence Number	Radionuclide ID	Analytical Method	High Detection Limit ±	Low Detection Limit ±	Detection Limit Units	Actual Source Concentration (pCi/g) ±	
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25	26 27	28 29 30 31 32 33 34 35	36 37 38 39 40 41 42 43	44 45 46 47 48 49 50 51	52 53 54 55 56 57 58 59	60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
S				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	
				R 0				▲ E	▲ E		▲ E	

R - RADIONUCLIDE DATA COMMENTS

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Component Sequence Number	Comments as Text
1 2 3 4 5 6	7 8	9 10 11	12 13	14 15	16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
S				R 1		
S				R 2		

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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EPA EADS SDDS

U.S. ENVIRONMENTAL PROTECTION AGENCY
IERL-RTP Research Triangle Park, N.C. 27711

SOLID DISCHARGE DATA SYSTEM

DATA INPUT FORMS

FORM 11 2/80

Form Completed by

T - BIOASSAY DATA

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Test Type*	Test Name*	Test Duration (Hr)	Lab. Sample ID
1–6	7–8	9–11	12–13	14–15	16–40	41–70	71–76	77–80
S				T 0				

Card No.	Test Laboratory Name*	Lab. QA/QC Code	Test Start Mo	Test Start Da	Test Start Yr	Test End Mo	Test End Da	Test End Yr			
14–15	16–56	57–59	60–61	62–63	64–65	66–67	68–69	70–71	72–80		
T 1											

Card No.	Sample Quantity	Sample Quan. Units	
14–15	16–23	24–29	30–80
T 2			

Card No.	Test Organisms/Strains*
14–15	16–80
T 3	
T 3	
T 3	

Card No.	Type of Value*	Value ±	Value Units*	High Confidence Limit ±	Low Confidence Limit ±	Maximum Applicable Dose ±	Maximum Applicable Dose Units	Level of Toxicity*	
14–15	16–19	20–26	27–34	35–41	42–48	49–56	57–65	66–79	80
T 4		E (23)		E (38)	E (45)	E (53)			

Card No.	Bacteria Mutagenicity Response*	Minimum Effective Conc. ±	Minimum Effective Conc. Units	Approximate Concentration Factor	
14–15	16–29	30–36	37–43	44–60	61–80
T 5		E (33)			

T - BIOASSAY COMMENTS

Test Series No.	Stream No.	Test ID. No.	Smpl. No.	Card No.	Line No.	Comments as Text*
1–6	7–8	9–11	12–13	14–15	16–17	18–80
S				T 9		
				T 9		
				T 9		
				T 9		
				T 9		
				T 9		
				T 9		
				T 9		

*Denotes Repetitive Data Feature at Sample Level

NOTE: When encoding data, use a Ø for alpha character and 0 for numeric zero.

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APPENDIX A.2

GLOSSARY OF DATA ELEMENTS

The following table is a glossary of the data elements in the EADS waste stream data bases. While this encompasses all the data elements in EADS, note that no single data system (fine particles, gaseous, liquids, or solids) contains all of the data elements. As an example, the NPDES number occurs only in LEDS.

The table lists the name of the data element (in the order it appears on the input forms) and a description of the data element. For further clarification of these definitions, refer to Section 4 of the EADS User Guides, the detailed encoding instructions.

FORM 1 -- Source Description

Data Element Name	Description
FPEIS Test Series Number	The permanent, unique number assigned by the EADS Program Manager to each test series in the Fine Particle Emissions Information System.
GEDS Test Series Number	The permanent, unique number assigned by the EADS Program Manager to each test series in the Gaseous Emissions Data System.
LEDS Test Series Number	The permanent, unique number assigned by the EADS Program Manager to each test series in the Liquid Effluents Data System.
SDDS Test Series Number	The permanent, unique number assigned by the EADS Program Manager to each test series in the Solid Discharge Data System.
(Not on Form)	The code letter which identifies the data base (F, G, L, or S) and the Test Series Number for data retrieval purposes.
(Not on Form)	The code letter which identifies the data base (F, G, L, or S), for data retrieval purposes.
Source Category	The grouping of major generic industries or source classes; i.e., the broadest description of a source (e.g., COMBUST-ENERGY, CHEMICAL MANUFAC, METALS, and NATURAL PRODUCTS).
Source Type	The kind of source within a source category (e.g., INDUSTRIAL, INORGANIC ACIDS, PRIMARY FERROUS, and WOOD).
Product/Device Type	The general device or specific product (e.g., BOILER, SULFURIC ACID, STEEL, and PULP AND PAPER).
SIC Code	The U.S. Department of Commerce Standard Industrial Classification code.
Process Type	The unique process being tested (e.g., TANGENTIAL, CONTACT PROCESS, BLAST FURNACE, and SULFATE PULPING).

FORM 1 -- Continued

Data Element Name	Description
Design Process Rate	The design capacity of the process.
Process Rate Units	The design process rate units, reflecting the type of process tested.
Feed Material Category	The general category of the process feed material or fuel (e.g., COAL, OIL, GAS, WOOD, SOLIDWASTE, and MTL SCRAP).
Source Name	The name of the source.
Site Name	The name of site where the source is located.
Street/Box Number	The number and name of the street address of the site.
City	The name of the city, township, or area.
State	The two-letter code for the state or Canadian province.
Zip Code	The zip code for the address of the site.
Country	The abbreviation for the country in which the source is located.
FPEIS Test Series Number	The Fine Particle Emissions Information System Test Series Number associated with the fine particulate information which was collected from the same source and at the same time as the data for the test series currently being encoded.
SDDS Test Series Number	The Solid Discharge Data System Test Series Number associated with the solid discharge information which was collected from the same source and at the same time as the data for the test series currently being encoded.
GEDS Test Series Number	The Gaseous Emissions Data System Test Series Number associated with the gaseous information which was collected from the same source and at the same time as the data for the test series currently being encoded.

FORM 1 -- Concluded

Data Element Name	Description
LEDS Test Series Number	The Liquid Effluents Data System Test Series Number associated with the liquid effluent information which was collected from the same source and at the same time as the data for the test series currently being encoded.
NPDES Number	The National Pollutant Discharge Elimination System number assigned by Permit Sections of the State or EPA Regional Offices.
Start Date	The starting date of the sampling activity.
Finish Date	The finishing date of the sampling activity.
(Not on Form)	The date indicating when the test series data were loaded into the data base, used for internal records.
Sponsor Organization	The name of the organization who sponsored the sampling program (e.g., EPA).
Contract Number	The number of the sponsoring organization contract.
TO/TD Number	The EPA task order or technical directive number.
Name of Sampling Group Contractor	The name of the sampling group or contractor.
Reference Report Title	The title of the report in which the data are reported.
Reference Report Author	The author of the reference report.
Reference Report Number	The number, as assigned by the sponsoring organization, of the reference report.
Reference Report Publication Date	The publication date of the reference report, as month and year.
Reference Report NTIS Number	The NTIS number of the reference report.
Line Number	The sequential number for each line of test series comments.
Test Series Comments	The comments on the test series.

FORM 1A -- Wastewater Collection System Effluent Identification

Data Element Name	Description
Site Latitude	The site latitude in units of degrees North.
Site Longitude	The site longitude in units of degrees West.
Fraction Design Rate of Industrial Origin	The fraction of the influent stream that is from industrial sources.
Contributing Industrial Category Number	The sequential number for the category of industry or commercial activity that contributes waste flow to the source.
Industry/Commercial SIC Number	The U.S. Department of Commerce Standard Industrial Classification code.
Category Flow Contribution	The fraction of flow contributed by the industry or commercial activity.
Number of Establishments	The number of establishments in the service area.

FORM 2 -- Stream Design Characteristics and Control Device/Treatment Process Data

Data Element Name	Description
Stream Number	The sequential number assigned to each effluent stream sampled at the source.
Flowrate	The design total mass or volumetric flowrate of the effluent in the sampled stream at normal maximum operating conditions.
Flowrate Units	The appropriate units of the stream flowrate.
Velocity	The design velocity of the effluent stream in m/sec at normal maximum operating conditions.
Temperature	The design temperature of the effluent stream in degrees Celsius at normal maximum operating conditions.
Pressure	The design absolute pressure in units of kPa of the effluent stream at normal maximum operating conditions.
Moisture Content	The design moisture content in percent by volume of the effluent stream at normal maximum operating conditions.
Stack Height	The height of the stack in meters, relative to ground level.
Stream Name	The name of the effluent stream sampled at the source (e.g., boiler flue gas, process wastewater, bottom ash, etc.).
Stream Comments as Text	The comments on the stream data.
Device Number	The number assigned to each control device or treatment, storage, or recovery process, unique within a test series.
Generic Device/Process Type	The type of generic control device or treatment process.
Design Type	The control device/treatment process design type.

FORM 2 -- Concluded

Data Element Name	Description
Specific Process/ Device Type	The control device/treatment process specific type.
Device/Process Class	The device/process class.
Device/Process Commercial Name	The commercial name and model number of the device/process.
Manufacturer	The name of the device/process manufacturer.
Sequence Number	The sequential number assigned to each device/process keyword.
Device/Process Keyword	The word that best describe the control device/treatment process in greater detail.
Parameter Number	The sequential number for the design parameter.
Design Parameter Name	The name of the design parameter.
Value Type	The code letter for the type of parameter value; T for text or N for number.
Parameter Value	The numeric value of the design parameter, in exponential format, nn.nn E ± nn.
Parameter Value Text/Units	The text value of the design parameter, or the units of the numeric value of the design parameter.

FORM 3 -- Test Identification and Control Device/Treatment Process Operating Parameters

Data Element Name	Description
Test ID Number	The sequential number for each test. A test is defined as a sample or series of samples at a given point in time for a particular source/control operating condition.
Test Date	The date the test was conducted or begun.
Start Time	The test starting time on the basis of a 24-hour day.
End Time	The test finish time on the basis of a 24-hour day.
Operating Mode	The mode of operation of the source at the time of the test (e.g., batch, continuous, cyclic, etc.).
Percent of Design Capacity	The percent of the design capacity at which the source is operating during the test.
Device/Process Number	The unique number previously assigned to each control device/treatment process.
Operating Parameter Number	The sequential number for each control device operating parameter.
Operating Parameter Name	The name of the operating parameter.
Value Type	The code letter for the type of parameter value; T for text or N for number.
Less Than/Greater Than Sign	The appropriate sign indicating if the data are less than or greater than a value.
Parameter Value	The numeric value of the operating parameter, in exponential format, n.nn E ± nn.
Operating Parameter Text/Units	The text value of the operating parameter, or the units of the numeric value of the operating parameter.
Comments as Text	The comments on the test operating conditions.

FORM 4 -- Fuels and Feedstocks

Data Element Name	Description
Source Feed Material	The specific name of the source feed material (e.g., Western PA Bituminous, Kraft Pulp, etc.).
Feed Material Rate and Units	The measured operating (not design) input rate of the source with the appropriate units.
Feed Material Sample Mass	The mass of the feed material sample.
Feed Material Mass Units	The units of the feed material sample mass.
Sequence Number	The sequential number that identifies each feed material or fuel type used.
Laboratory Name	The name of the laboratory that performed the fuels and feedstocks analysis.
QA/QC Code	The quality assurance/quality control code for the laboratory.
Feed Material Sample Volume	The volume of the feed material sample.
Volume Units	The units of the feed material sample volume.
Proximate Analysis Parameter	The parameter associated with the proximate fuel analysis, as per ASTM D3172-73.
Value	The value of the proximate analysis parameter.
Units	The units of the proximate analysis parameter value.
Ultimate Analysis Parameter	The parameter associated with the ultimate fuel analysis, as per ASTM D3176-74.
Value	The value of the ultimate analysis parameter in units of percent by weight.

FORM 4 -- Concluded

Data Element Name	Description
Parameter Name	The name of the fuels and feedstocks parameter analyzed (e.g., bulk density, viscosity, pour point, etc.), excluding inorganic trace elements and organic chemical species and compounds.
Value Type	The code letter for the type of parameter value; T for text or N for number.
Less Than/Greater Than Sign Value	The appropriate sign indicating if the data are less than or greater than a value. The value of the parameter, in exponential format n.nn E ± nn.
Units	The text value of the parameter, or the units of the numeric value of the parameter.
Analytical Method	The two-character code for the chemical analysis method used.
High Detection Limit	The upper detection limit, in exponential format, nn.nn E ± nn.
Low Detection Limit	The lower detection limit, in exponential format, nn.nn E ± nn.
Detection Limit Units	The units of the upper and lower detection limits.

FORM 5 -- Fuels and Feedstocks -- Chemical Analysis

Data Element Name	Description
Chemical ID Type	The chemical entry code which determines the type of chemical ID used (C for CAS number or M for MEG number).
Category/Species ID	The chemical ID for the organic category or species, or the inorganic species.
Species Priority/ Hazardous Pollutant Designation (Not on Form)	Identification of whether the chemical species is a NRDC Consent Decree Priority Pollutant or a Section 311 Hazardous Pollutant, or both.
Analytical Method	The two-character code for the chemical analysis method used.
High Detection Limit	The upper detection limit, in exponential format, nn.nn E ± nn.
Low Detection Limit	The lower detection limit, in exponential format, nn.nn E ± nn.
Detection Limit Units	The units of the upper and lower detection limits.
Total Milligrams Recovered	The total milligrams of the category/species found in the sample.
Less Than/Greater Than Sign	The appropriate sign indicating if the data are less than or greater than a value.
Actual Concentration	The actual concentration of the category/species, in exponential format, n.nn E ± nn.
Actual Concentration Units	The units of the actual concentration.
Comments as Text	The comments on the analysis of the fuels and feedstocks.

FORM 6 -- Sampling Activity Description

Data Element Name	Description
Sample Number	The sequential number for each sample, unique within a Test ID. A sample is the measurement or group of measurements taken with a single measurement method to define the composition of a stream at a given point in time.
Method Type	The code letter for the type of measurement instrument/ method; I for inertial impaction (e.g., impactor, SASS), or X for other.
Measurement Instrument/ Method Name	The name of the measurement instrument/ method.
Sampling Start Time	The start time of the sample collection on the basis of a 24-hour day.
Sampling Duration	The duration of the sample collection activity in minutes.
Measured Stream Velocity	The measured velocity of the effluent stream in m/sec.
Measured Stream Temperature	The measured temperature of the effluent stream in units of degrees Celsius.
Measured Stream Pressure	The measured absolute pressure of the effluent stream at the sampling location, in units of kPa.
Measured Stream Moisture Cnotent	The measured moisture content of the effluent stream at the sampling location, in units of percent by volume.
Density	The particle density of a particulate laden gas stream, or the bulk density of a solid discharge stream, in g/cm^3.
Density Determination	The number 1 for measured density, or 0 for assumed density.
Sample Volume	The total volume collected for the sample in units of m^3 (or liters for a liquid sample).

FORM 6 -- Continued

Data Element Name	Description
Measured Stream Flowrate	The measured total mass or volumetric flowrate of the effluent stream at the sampling location.
Flowrate Units	The units of the effluent stream flowrate.
Flowrate Measurement Method Sample Total Mass	The technique or equipment used to determine the effluent stream flowrate. The total mass of the sample collected.
Mass Units	The units of the sample mass.
Sampling Location Code	The code letter for the sampling location; I for inlet of control device/treatment process or for uncontrolled/untreated, O for outlet of control device/treatment process, G for treatment plant inlet, H for treatment plant outlet, or S for final sludge disposal outlet.
Device/Process Number	The number which identifies to which device or process the sampling location code refers.
Sampling Location Description	The sampling location description in terms of proximity to control devices and discharge points, including any information that affects the sampling and transport of discharges or emissions.
Instrument Temperature	The temperature of the sampling instrument in degrees Celsius.
Instrument Pressure	The inlet absolute pressure of the sampling instrument in kPa.
Instrument Flowrate	The instrument flowrate in liters/minute.
Percent Isokinetic	The percent isokinetic sampling achieved at the sampling location.
CO_2	The amount of CO_2 as a percent of total gas on a dry basis as determined by gas analysis.

FORM 6 -- Concluded

Data Element Name	Description
CO	The amount of CO as a percent of total gas on a dry basis as determined by gas analysis.
O_2	The amount of O_2 as a percent of total gas on a dry basis as determined by gas analysis.
N_2	The amount of N_2 as a percent of total gas on a dry basis as determined by gas analysis.
Dilution Factor	The ratio of aerosol concentration (on either a mass or number basis) in the original gas stream to that of the measured sample. The number 1 if the aerosol is not diluted, as is the usual case when sampling with impactors.
Particle Diameter Basis	The number 0 for Stokes particle diameter, 1 for classic aerodynamic particle diameter, or 2 for aerodynamic impaction particle diameter.
Particle Concentration Basis	The number 1 if the instrument/method measures mass, or 0 if it measures the number of particles.
Upper Boundary Diameter	The upper boundary diameter in units of microns.
Calibration/Calculation	The number 1 for calibrated instrument cut diameters, or 0 for calculated instrument cut diameters.
Trace Gases in PPM	The results of trace gas analysis, with the chemical symbol followed by a dash and the value in parts per million (e.g., SO2-15).
Collection Surface/ Substrate	The description of any surface or substrate used for sampling.
Comments as Text	The comments on the sampling activity.

FORM 7 or 7A -- Component Data and Effluent Characteristics

Data Element Name	Description
Component Sequence Number	The sequential number for each component of the measurement instrument/method analyzed.
Component Name	The specific component of the sampling equipment (e.g., the 10 micron cyclone of a SASS train, the filtrate of a liquid sample, etc.).
Stage/Filter Cut Size	The particle boundary diameter in units of microns.
Less Than/Greater Than Sign	The appropriate sign indicating if the data are less than or greater than a value.
Stage Weight/ Component Mass/ Concentration	The stage weight (FPEIS), component weight (GEDS, LEDS), or mass (SDDS) in milligrams; or the mass concentration (FPEIS) in micrograms/dry normal cubic meter; or the number concentration (FPEIS) in number of particles/dry normal cubic meter, for the sampling system component, in exponential format, n.nn E ± nn.
Mass Concentration/Stage (Not on Form)	FPEIS Only: The calculated mass concentration per stage in micrograms/dry normal cubic meter, in exponential format, n.nn E ± nn.
Number Concentration/Stage (Not on Form)	FPEIS Only: The calculated number concentration per stage in number of particles per dry normal cubic meter, in exponential format, n.nn E ± nn.
Cumulative Mass Percent Less Than Stage Size (Not on Form)	FPEIS Only: The calculated cumulative percent of the total mass less than the stage size (d50).
Cumulative Mass/Actual Cubic Meter Less than Stage Size (Not on Form)	FPEIS Only: The calculated cumulative mass concentration in micrograms per actual cubic meter, in exponential format, n.nn E ± nn.

FORM 7 or 7A -- Continued

Data Element Name	Description
Cumulative Mass/ Dry Normal Cubic Meter Less Than Stage Size (Not on Form)	FPEIS Only: The calculated cumulative mass concentration in micrograms per dry normal cubic meter, in exponential format, n.nn E ± nn.
Geometric Mean Diameter/Stage (Not on Form)	FPEIS Only: The calculated average of the logarithms of the maximum and minimum particle sizes found on the stage, in exponential format, n.nn E ± nn.
Differential Mass Concentration/Stage (Not on Form)	FPEIS Only: The calculated change in mass concentration due to particles caught on this stage (DM/DlogD), in exponential format, n.nn E ± nn.
Differential Number Concentration/Stage (Not on Form)	FPEIS Only: The calculated change in number concentration due to particles caught on this stage (DN/DlogD), in exponential format, n.nn E ± nn.
Chemical Analysis Laboratory Name	The name of the laboratory which performed the chemical analysis on the samples.
Chemical QA/QC Code	The QA/QC code for the chemical analysis laboratory.
Radiological QA/QC Code	The QA/QC code for the radionuclide analysis laboratory.
Radiological Analysis Laboratory Name	The name of the laboratory which performed the radionuclide analysis on the samples.
Component (Aliquot) Mass/Volume	The mass or volume of the sample aliquot.
Mass/Volume Units	The appropriate units of the sample aliquot.
Effluent Parameter Name	The name of the effluent parameter (e.g., opacity, pH, oil and grease, odor, etc.), excluding organic and inorganic species measurements.
Value Type	The code letter for the type of parameter value; T for text or N for number.

FORM 7 or 7A -- Concluded

Data Element Name	Description
Value	The numeric or text value of the effluent parameter.
Value Units	The units of the numeric value of the parameter.
Analytical Method	The two-character code for the chemical analysis method used.
High Detection Limit	The lower detection limit, in exponential format, nn.nn E ± nn.
Low Detection Limit	The lower detection limit, in exponential format, n.nn E ± nn.
Detection Limit Units	The units of the upper and lower detection limits.
Comments as Text	The comments on the effluent characteristics.

FORM 8 -- Inorganic Analysis/Non-Level 1 Organic Analysis

Data Element Name	Description
ID Type	The chemical entry code which determines the type of chemical ID used (C for CAS number or M for MEG number).
Category/Species ID	The chemical ID for the organic category or species, or the inorganic species.
Species Priority/ Hazardous Pollutant Designation (Not on Form)	Identification of whether the chemical species is a NRDC Consent Degree Priority Pollutant or a Section 311 Hazardous Pollutant, or both.
Analytical Method	The two-character code for the chemical analysis method used.
High Detection Limit	The upper detection limit, in exponential format, nn.nn E ± nn.
Low Detection Limit	The lower detection limit, in exponential format, nn.nn E ± nn.
Detection Limit Units	The units of the upper and lower detection limits.
Total Milligrams Recovered	The total milligrams of the category/species found in the sample.
Less Than/Greater Than Sign	The appropriate sign indicating if the data are less than or greater than a value.
Actual Source Concentration	The actual source concentration for this component of the category/species, in exponential format, n.nn E + nn; in micrograms per cubic meter (FPEIS and GEDS), per liter (LEDS), or per gram (SDDS).
Comments as Text	The comments on the inorganic/non-Level 1 organic analysis data.

FORM 9 -- Level 1 Organic Analysis

Data Element Name	Description
Fraction ID	The organic fraction determined by liquid chromatography per Level 1 analysis procedures and designated LC1-LC7, or TOT if the sample was not fractionated.
TCO	The total chromatographable organics (TCO) measured for each LC fraction, in milligrams.
Grav.	The weight in milligrams of each LC fraction determined by gravimetric analysis.
(Calculated Data - Not On Form)	The sum of TCO and GRAV for each LC fraction.
ID Type	The chemical entry code letter M for MEG number, the type of chemical ID used.
Category/Species ID	The MEG ID number for the organic chemical category or species.
Species Priority/ Hazardous Pollutant Designation (Not on Form)	Identification of whether the chemical species is a NRDC Consent Decree Priority Pollutant or a Section 311 Hazardous Pollutant, or both.
Analytical Method	The two-character code for the chemical analysis method used.
High Detection Limit	The upper detection limit, in exponential format, nn.nn E ± nn.
Low Detection Limit	The lower detection limit, in exponential format, nn.nn E ± nn.
Detection Limit Units	The units of the upper and lower detection limits.
Intensity	The assigned intensity (in essence a weighting factor) used to indicate relative presence of chemical categories obtained from either infrared (IR) or low resolution mass spectrometry (LRMS) analysis data. Values are 100, 10 or 1 and are used to calculate concentration estimates.

FORM 9 -- Concluded

Data Element Name	Description
Less Than/Greater Than Sign	The appropriate sign indicating if the data are less than or greater than a value.
Actual Source Concentration	The actual source concentration for this component of the category/species, in exponential format, n.nn E + nn, in micrograms per cubic meter (FPEIS and GEDS), per liter (LEDS), or per gram (SDDS).
Comments as Text	The comments on the Level 1 organic analysis.

FORM 10 -- Radionuclide Data

Data Element Name	Description
Radionuclide ID	The name of the isotope assayed, as a symbol followed by a dash and the mass number (e.g., RA-226, U-235, etc.).
Analytical Method	The two-character code for the assay (analysis) method used.
High Detection Limit	The upper detection limit, in exponential format, nn.nn E ± nn.
Low Detection Limit	The lower detection limit, in exponential format, nn.nn E ± nn.
Detection Limit Units	The units of the upper and lower detection limits.
Less Than/Greater Than Sign	The appropriate sign indicating if data are less than or greater than a value.
Actual Source Concentration	The actual source concentration for this component of the isotope, in exponential format, n.nn E ± nn, in pCi per cubic meter (FPEIS and GEDS), per liter (LEDS), or per gram (SDDS).
Comments as Text	The comments on the radionuclide data.

FORM 11 -- Bioassay Data

Data Element Name	Description
Test Type	The name of the broad category of bioassay test type.
Test Name	The exact name of the bioassay test (a subset of Test Type).
Test Duration	The duration of the test in hours.
Lab Sample ID	The unique sample ID assigned by the test laboratory.
Test Laboratory Name	The name of the bioassay testing laboratory.
Lab QA/QC Code	The bioassay laboratory QA/QC code.
Test Start	The start date of the bioassay test.
Test End	The end date of the bioassay test.
Sample Quantity	The quantity of sample submitted for analysis.
Sample Quantity Units	The units of the sample quantity.
Test Organisms/Strains	The name of the specific test organism used (e.g., SALMONELLA TYPHIMURIUM TA-1538 or TA-98, etc.).
Type of Value	The value type (e.g., LD50, LC50, EC50, etc.) depending on the assay.
Value	The value of the assay results, in exponential format, n.nn E ± nn.
Value Units	The units of the assay results value.
High Confidence Limit	The upper confidence limit of the assay results value, in exponential format, n.nn E ± nn.
Low Confidence Limit	The lower confidence limit of the assay results value, in exponential format, n.nn E ± nn.

FORM 11 -- Concluded

Data Element Name	Description
Maximum Applicable Dose	The technical limitation on the dose allowed in a particular assay, in exponential format, n.nnn E ± nn.
Maximum Applicable Dose Units	The units of the maximum applicable dose.
Level of Toxicity	The qualitative bioassay result, as HIGH, MODERATE, LOW, or NOT DETECTABLE.
Bacteria Mutagenicity Response	The Ames test response, as POSITIVE or NEGATIVE.
Minimum Effective Concentration	The minimum effective concentration, in exponential format n.nn E ± nn.
Minimum Effective Concentration Units	The units of the minimum effective concentration.
Approximate Concentration Factor	The factor which accounts for any aliquot taken during the bioassay lab procedures; not the process stream flow.
Line Number	The line number for the bioassay comments.
Comments as Text	The comments on the bioassay data.